

AIRPORT JOINT USE FEASIBILITY STUDY 1993

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Calverton Airport

Long Island Regional Planning Board

AIRPORT JOINT USE FEASIBILITY STUDY

Prepared by:

**Long Island Regional Planning Board
Hauppauge, New York**

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Preface

In 1963 Suffolk County's first Executive, H. Lee Dennison, recommended that Calverton Airport become the fourth major New York Metropolitan airport. The United States Navy, who built and owned the facility, joined by its tenant, Grumman Aircraft Corporation, objected strenuously. Their position was that the property was created for naval device testing and the production and testing of high performance military aircraft which required the highest order of security and flight operational priority, which precluded joint use of any kind. Their posture was firm even though every other manufacturer of military aircraft in the United States operated out of joint civilian/military airfields.

The members of the Wading River Civic Association were also in strong opposition. Since the Navy controlled the decision process, Dennison's proposal went nowhere. In retrospect, it was a correct decision because Grumman was very aggressively increasing employment and flight operations at the field.

For almost three decades the concept of joint use remained moot. Then several independent set of circumstances all coalesced, leading to the reopening of the issue of joint use.

The first was the collapse of the Soviet Union, which dramatically altered the two-superpower status of international conflict, leaving the United States as the universal superpower. An immediate consequence was the lack of need for the post World War II arms race, therefore reducing the need for military hardware.

A second factor was the decision of the Secretary of Defense to favor other manufacturers over Grumman, which severely curtailed and eventually abolished major programs. Employment at Calverton, which reached a high of almost 4,000 jobs, fell by more than one half. More to the point, the promise for the future indicated little hope for major military production.

A third situation relates to the first two examples. The Department of Defense has to determine which bases are expendable in the face of budgetary reductions that may be imposed by Congress.

Thus, by 1991 attitudes at Grumman and the Navy were more favorable to the concept of joint use. Their expression of interest was conveyed to County Executive Halpin, who suggested that the Long Island Regional Planning Board give consideration to the filing of an application with the Federal Aviation Administration for planning funds to enable the Board to study the feasibility of developing non-defense employment at the Calverton facility.

The Board had an interest in conducting the study for several reasons. Calverton Airport was and is one of the four significant airfields in Suffolk County which include: Republic Airport in the Town of Babylon operated by the New York State Department of Transportation, MacArthur Airport in and operated by the Town of Islip, and Suffolk County's Gabreski Airport in the Town of Southampton. Several aviation planning studies conducted by Suffolk County have all identified the economic value of these facilities to the County. In addition, the Suffolk County Planning Department study of 1964, titled *Park and Ride* presented a comprehensive view of intermodal transportation linking rail, highway and air facilities that placed emphasis on mass transportation as a relief for the already over-used highway system. The Long Island Rail Road has already carried out one of the recommendations involving the electrification of the main branch to MacArthur Airport. The County conducted three studies for the County Airport that stressed the benefit to tourism and job creation by the use of general and freight operations. MacArthur is the County's commercial passenger airport and has continually upgraded its operations while paying close attention to the need to protect adjacent homeowners from noise.

With the exception of Calverton, the other three are following the planning potential set forth years ago. Their past, present and future is well defined. If the conditions stated earlier in the preface did not occur, and if Grumman's employment had remained at its earlier peak, there undoubtedly would have been little reason for the current study. Unfortunately, this is not the case. In the past three years,

Long Island has lost more than 100,000 jobs. Grumman was a major employer for the East End. When the unemployment statistics for the eastern towns is examined it become eminently clear that job creation and stability is important.

An application was filed in April 1991 requesting a planning grant in the sum of \$486,000 of which the local share was ten percent and the remainder to be paid by the FAA. See Appendix C.

The FAA indicated that they preferred to place the contract in their subsequent funding cycle. On September 12, 1992 the FAA gave their final approval to commence the work.

As soon as the award was made public, an immediate flurry of pro and anti activities were initiated. Local residents near the airport individually and collectively registered opposition to the concept inherent in the study, the study itself, the Board, and the Board's Executive Director who serves as project director on all of the Board's studies.

This was matched by strong support from business-oriented citizens, again individually and collectively, who saw a potential for job and tax base growth that they were in favor of. County Executive Gaffney and Governor Mario Cuomo strongly supported the conduct of the study and committed key members of their administrations to assist in the study.

The first two steps taken by the project director was the organization of the professional staff to carry out the day-to-day work and the creation of a broad-based advisory council composed of civic, environmental, business, minority community, elected officials and technically competent appointed officials to assist the Board in the development of the study. The history of the Advisory Council constitutes a separate chapter of the study and is an interesting story of the group and individual dynamics involved in arriving at public policy conclusions whenever the subject is highly controversial.

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CHAPTER ONE

Introduction

Regional Locational Setting

The Naval Weapons Industrial Reserve Plant, Calverton, New York (NWIRP) is located in Suffolk County at a site that is about 97 miles east of mid-town Manhattan and more than 50 miles west of Montauk Point. Figure 1-1 depicts its location with respect to the New York Metropolitan Region.

Study Area Setting

Two designations were selected for the study.

- The first depicts the overall boundary deemed to be directly impacted by past, present or future activities at the airfield. After discussion with the *Advisory Council (AC)* it was agreed that a radius of approximately 10 miles from the center of the airfield would constitute the overall study area and be referred to as the *Primary Study Area (PSA)*.
The boundary extends from the Long Island Sound on the north to the Great South Bay on the south; and from the Jamesport community in eastern Riverhead Town to the Yaphank community in the Town of Brookhaven to the west. The PSA includes the four approaches to the two runways. Figure 1-2 depicts the PSA.
- The second designation covers the 2,913 acres within the fenced-in portion of the United States Navy holdings that comprise the operational airport, including runways, supporting facilities and the majority of Grumman's production buildings. It is within this fenceline that the study will assess the feasibility of whether or not joint commercial/military use of the airfield is practical. Figure 1-3 depicts the property within the fenceline referred to as the *Airport Study Area (ASA)*.

Description of Airfield

In 1952, the Navy acquired 4,400 acres for airfield runway construction and associated facilities under Civil Action No. 84. Approximately 2,913 acres were leased to the Grumman Corporation for airfield operations which commenced

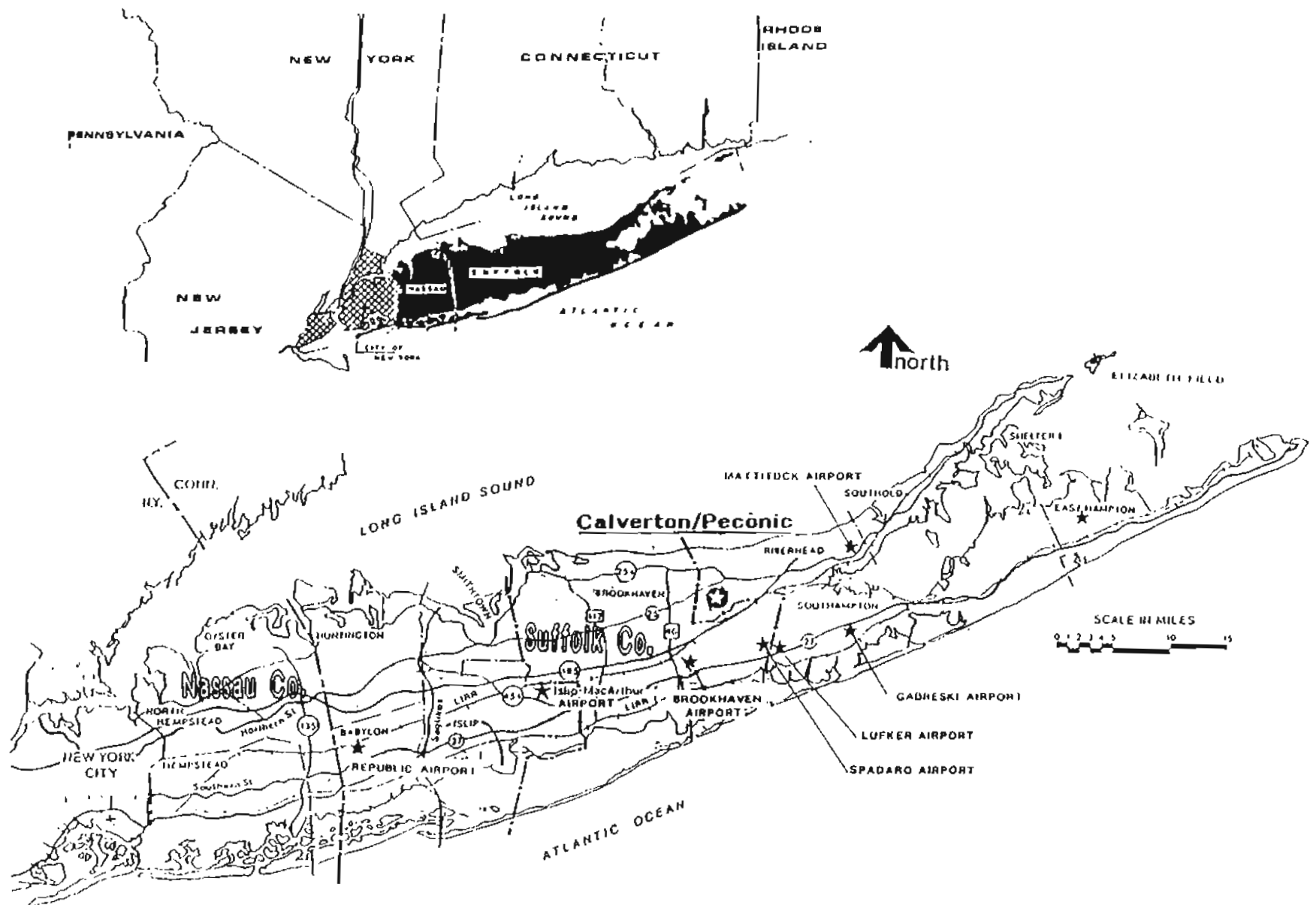


Figure 1-1 Location Map

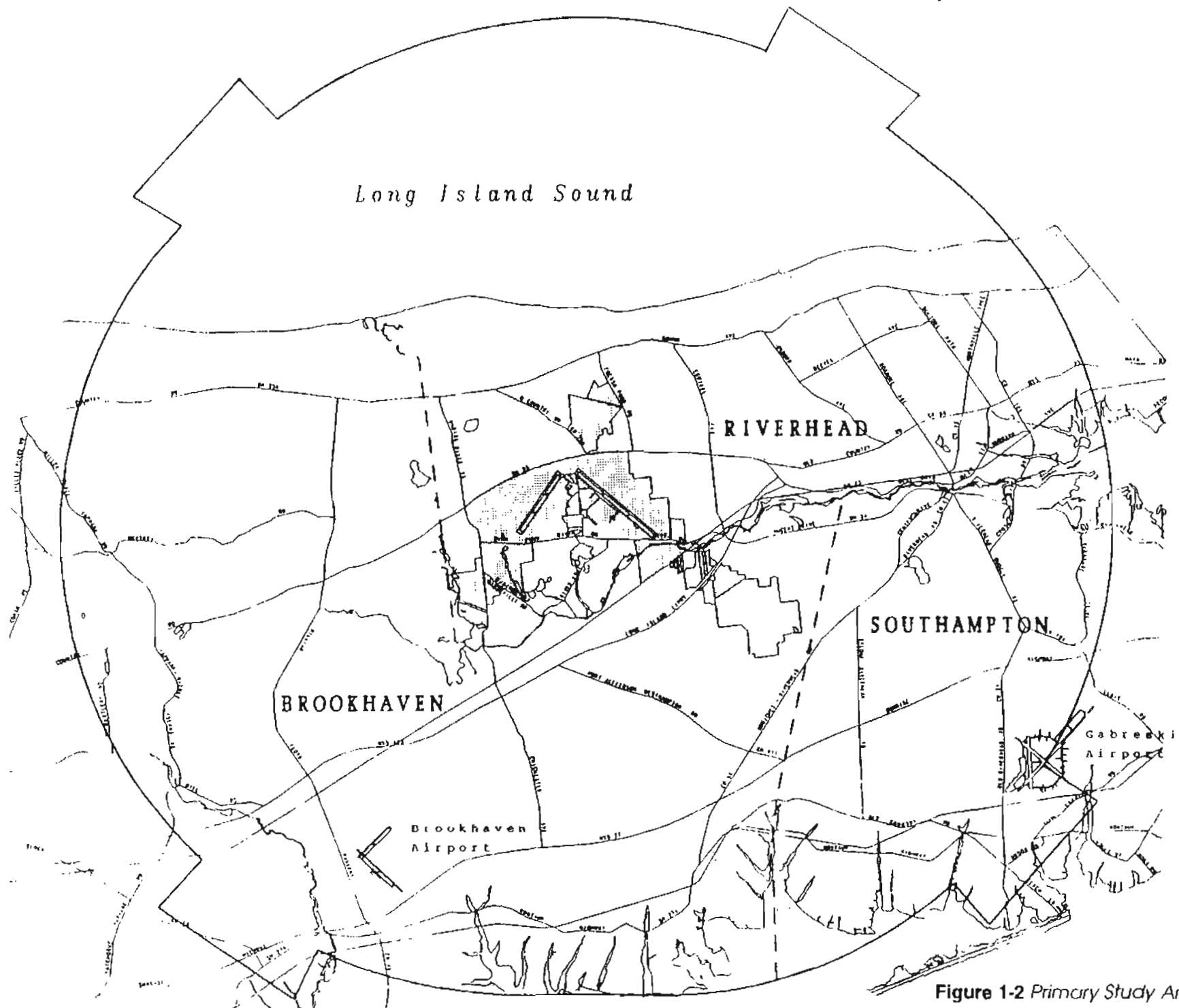


Figure 1-2 Primary Study Area (PSA)

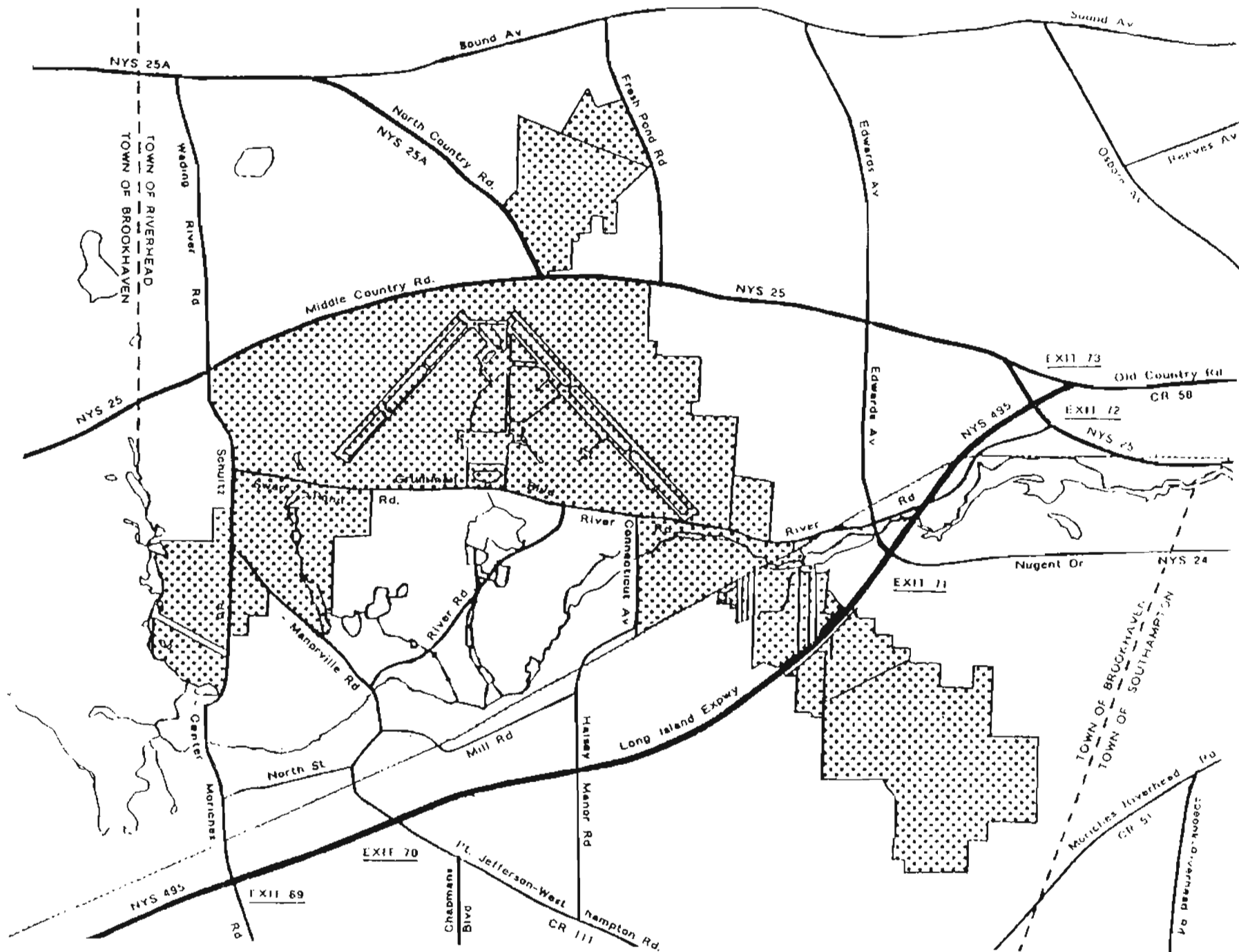


Figure 1-3 Airport Study Area (ASA)

In 1954, while the remaining acreage was designated as buffer zones. Buffer zones were designated as expansions of runway centerlines resulting in four discrete units. Several additional parcels were acquired during the period 1959 through 1963 by deed from individual owners to halt encroaching development.

In 1976, 902 acres of the northwest buffer zone were ex-ceded to the Veterans Administration for construction of the Calverton National Cemetery. NWIRP now encompasses 5,899 acres.

The northeast 476 acres of runway buffer zones within NWIRP is located north of Route 25. The southeast and southwest buffer zones, located south of Grumman Boulevard, have areas of 1,698 and 812 acres, respectively. The total runway buffer zone area is 2,986 acres.

Runway 14/32 at Calverton is 10,001 feet long, 200 feet wide and lies roughly NW to SE; runway 5/23 is 7,001 feet by 200 feet and lies NE to SW. (14/32 and 5/23 refer to compass heading 140 degrees/320 degrees and 5 degrees/230 degrees.)

The NWIRP provides facilities for final assembly and flight acceptance testing of military aircraft.

Airport Development and Usage

In 1952 the Navy purchased property in Calverton and commenced the development of what would be called the Naval Weapons Industrial Reserve Plant (NWIRP)/Peconic River Facility. This included a final assembly/manufacturing center, a flight test center, a runway of 10,000 feet and an auxiliary runway of 7,000 feet. This was the first aircraft plant in the U.S. built specifically though not exclusively, for the assembly and flight test of jet aircraft. Since 1954 five more buildings were constructed.

The Navy's original land purchase in 1952 was for approximately 4,500 acres. In 1957, however, there was attempt to secure easements and restrictive covenants on 21,469

acres of Riverhead and Brookhaven town properties to secure a larger buffer zone around the Peconic River Plant

The majority of the 6,000 acres—5,000—is in the Town of Riverhead. The balance is in the Town of Brookhaven. The prime mission of the *Calverton Naval Weapons Industrial Reserve Plant* (NWIRP) is to provide industrial capacity for national defense and for mobilization in the event of a national emergency.

Mission activities of the Calverton facility encompass development, production, major and final assembly, flight testing, overhaul, maintenance and servicing of experimental and production military aircraft, missiles, and weapons systems. The NWIRP Calverton facility is unique in that it has been designed specifically to provide the environment peculiar to the needs of developmental aircraft and weapons systems flight testing, as well as to the needs of assembly and delivery of production aircraft/weapons systems.

The Calverton facility is the only final assembly plant for the Navy jet aircraft manufactured by Grumman at their Bethpage facility, also located on Long Island. Components and sub-assemblies are manufactured at Bethpage.

Operations at NWIRP Calverton included flight operations not only by Grumman and U.S. military aircraft, but by airline aircraft on training missions and general aviation aircraft as well. All significant aircraft run-up operations serve the Grumman development and testing mission. Of the total operations, it is the Grumman and military portion which generate the significant accident potential and noise impact. The aircraft presently assigned to the NWIRP Calverton facility include several types of newly assembled aircraft in various stages of first and checkout flights, prototype and development aircraft undergoing test flights, some tanker and chase plane types, and miscellaneous ferry and corporate aircraft, and rescue helicopters.

During the past decade the average annual traffic count (each take off and each landing is an individual count) was 6,470. On a daily basis this equates to 18 counts. However, if non-flight days are taken into consideration, the ac-

tual average was approximately 26 per day. The average commercial component was approximately 2 per day.

Origination of Report

The balance of this report is contained in seven chapters and several appendices. They are generally organized in a sequential pattern which reflects the methodological organization of the study.

Chapter Two is made up of seven parts, which explore the nature of the air cargo industry and the potential for the commercial development of a portion of the Calverton airfield.

Chapter Three presents an analysis of the environmental conditions at the property within the fence line and the larger primary area. The purpose of this work was to determine which portions of the potential area for development could be used in an environmentally sound way, in contrast with those portions that have constraints against usage. This analysis defines the limits to construction and, therefore, the limits to economic development.

Chapter Four reviews the existing and potential land uses planned by the County of Suffolk and the Towns of Riverhead, Brookhaven, and Southampton and the impact of expanded use of the Calverton airfield on these communities. There is also a review of the transportation implications of commercial development on the road and rail networks.

Chapter Five contains the commercial development alternative that might occur at the airfield. The upper limits to growth were set by the environmental constraints identified in Chapter Three.

Chapter Six contains the estimates of infrastructure costs to develop the various alternatives and who must bear the cost for development. In addition, several administrative alternatives ranging from a fixed based operator to a New York State Authority are discussed.

Chapter Seven concentrates on the history and role of the Advisory Council which consisted of ardent supporters of the expanded use of Calverton and equally ardent opponents to such use. Particular attention is given to the critical issues that were raised since these objections provided a sharp focus for the staff on matters that must be addressed in order to achieve a comprehensive plan—and a plan that can stand the test of political scrutiny and challenge.

Chapter Eight concludes the study and contains the recommendations and findings of the Long Island Regional Planning Board after their review and consideration of the staff's work.

Appendix A contains the references cited in the text by number. The use of this endnote system rather than the listing of footnotes on each page was chosen so as to provide an unbroken text.

Appendix B contains the bibliography

Appendix C summarizes the grant application

Appendix D contains a copy of the report prepared by Gilman and Gander for the North Fork Environmental Council. This report was useful to the staff in identifying the issues that should be addressed relative to community character, related land use concerns and commercial airport operations.

Appendix E contains examples of the survey forms that were used in Part Four of Chapter Two.

Appendix F contains the Airport Layout Plan.

CHAPTER TWO

Economic Analysis

This chapter analyzes the economic feasibility of developing air cargo facilities at Calverton Airport as a catalyst for economic development in eastern Suffolk County and throughout Long Island. The goal of the study is to determine how the Calverton Airport site can best be utilized in promoting economic development. Air cargo facilities are envisioned as part of the overall economic development package.

This chapter encompasses six major sections.

Part One analyzes the recent growth of the U.S. air cargo industry and reviews the technological innovations that have led to rapid increases in the effective payload capacity of freighter aircraft. It projects the future growth of the air cargo industry during the 1990s and suggests the type of air cargo services that domestic and international carriers will provide. The final section discusses the potential benefits of separate regional air cargo centers and outlines the facilities required by such centers.

Part Two focuses specifically on the aviation and air cargo industry in the New York Region. It analyzes the types of jobs generated by the region's aviation industry and discusses the economic impact of existing Long Island airports. It presents detailed information about the volume and dollar amount of specific commodities that are shipped by air through the New York Customs District. It discusses the level of congestion at New York's three major regional airports — Kennedy, LaGuardia, and Newark. The need to mitigate existing airport congestion is one of the major justifications for separate regional air cargo facilities. The final sections detail on-going infrastructure improvements related to air cargo operations at the three regional airports and discuss the evolution of Stewart Airport in Newburgh, New York as a passenger and cargo facility. The Stewart experience is instructive because the major problems that Stewart Airport faced in the 1980s are similar to those facing other airports that attempt to establish

themselves as cargo hubs. That is, it is often difficult to attract freight forwarders and to convince them to route freight to locations other than major airports where the bulk of freight, connecting carriers, and competition is located. This would appear to be a crucial test for a potential air cargo facility at Calverton.

Part Three analyzes the potential for generating air cargo in the New York Region and on Long Island. It projects the volume of domestic and international air cargo for the three regional airports — Kennedy, LaGuardia, and Newark — through the year 2000. Given the fact that Calverton's location lends itself to international trade, particularly with Europe, the region's current export commodities and export markets are analyzed in detail. Long Island's existing manufacturing base and that of New York City, southwestern New England, and the northern suburbs of Westchester, Rockland, Orange and Putnam are then analyzed to pinpoint the geographic origins of the region's dominant export commodities. This statistical analysis has been supplemented by interviews with those Long Island firms actively engaged in international trade. What follows is an assessment of the potential for generating air freight for a possible cargo facility at Calverton Airport.

Part Four presents the results of a survey questionnaire sent to freight forwarders, customs brokers, integrated carriers and major airlines that have all cargo operations. Most of these providers operate out of Kennedy Airport. The questionnaire sought to ascertain their general in-

terest in utilizing potential air cargo facilities at Calverton Airport. Air freight providers were also asked to specify under what circumstances they would consider using such a facility. Part four also compares operating costs at Long Island's satellite airports vis-a-vis comparable costs at the region's three major airports.

Part Five presents three alternate economic development plans for the available acreage within the fence at Calverton Airport. These scenarios are based on an analysis of the types of facilities available at other cargo airports and on Calverton's unique locational advantages. They specify the types of facilities that could be developed at Calverton Airport, the square footage associated with each of these facilities, the number of jobs that are likely to be generated by each facility, and the wage payments associated with those jobs. Site plans are found in Part Four.

Part Six traces the impact of the foregoing economic development scenarios on the Long Island economy. Using an input-output model of the Long Island economy, it describes the indirect or *multiplier* effects of these development projects on overall Long Island output, earnings, and employment. The indirect impact has been computed for both the construction phase and the permanent phase of operation. In order to cover all bases and consider all possibilities, Part Six also computes the economic impact of a complete *pullout* by the Grumman Corporation from the Calverton facility once its lease expires.

PART ONE

The U.S. Air Cargo Industry

The growth of global markets coupled with changes in the regulatory structure of the air freight industry resulted in the exponential growth of air cargo traffic. Service innovations and technological developments within the air freight industry itself also contributed to growth.

The Growth of Global Markets, International Trade

International trade, which linked distant markets, has become a major source of economic growth not only within the United States but within foreign countries as well. The World Bank estimates that in the 1980s, *Gross Domestic Product* (GDP) increased at an average annual rate of 3% in the industrialized nations while exports from those nations grew at an average annual rate of 4.8%. World exports from all countries grew at an average annual rate of 19% between 1970 and 1990. In the past two decades, three major trading blocs have developed: North America, the European Community and East Asia. Exports and imports now represent 21% of the American economy, up from 9% in 1959.

Several factors were responsible for the rapid growth of International trade. U.S. manufacturers, faced with increasing domestic production costs, *outsourced* production to lower-cost locations, especially those in emerging Pacific Rim countries. Outsourcing also facilitated the ability of U.S. firms to penetrate foreign markets. The net effect of outsourcing was to increase the volume of global air freight as the foreign-made products of U.S. firms were shipped back to the United States and to other major world markets.

Outsourcing was one response to growing world competition within manufacturing. U.S. manufacturing firms also attempted to become more competitive through improved customer service, particularly consistent on-time delivery to customers around the world. In today's competitive envi-

ronment, on-time delivery often means delivery within forty-eight hours. Manufacturing efficiency also requires just-in-time delivery of raw materials and intermediate goods. These inputs are often gathered from disparate locations around the globe. On-time customer delivery and just-in-time inventory management often require air transportation. The cost of air transportation is particularly justified for the high value added, low-bulk products such as electrical equipment. Such products are becoming a growing share of total manufacturing. Air cargo can often be economically justified even for lower value, high-bulk items such as high-fashion apparel. This is because transportation by sea entails higher interest costs, higher expenditures for warehousing and handling and greater obsolescence costs.

According to the U.S. Census Bureau, the United States exported 1.5 million metric tons of cargo by air during 1990. This was equivalent to less than 1% of total metric tonnage exported¹. Nevertheless, air cargo was a significant mode of transportation for certain key commodities notably pharmaceuticals, printed books and newspapers, electrical machinery, aircraft and parts, spacecraft, optical and photographic instruments, medical equipment, and works of art. In 1990, more than 19,000 metric tons of pharmaceuticals were exported by air from the United States. This was equivalent to almost 21% of the total tonnage of pharmaceuticals exported. Almost 43,000 metric tons of printed books and newspapers were exported by air in 1990, one-third of the tonnage exported. More than half of all aircraft and spacecraft exports utilized air freight. More than 86,000 metric tons of optical, photographic and medical equipment were exported by air in 1990, 43% of total tonnage exported in these commodities. Two-thirds of all works of art exported from the United States utilized air freight.

When exports are expressed in terms of dollar amounts, the share accounted for by air freight is even more impressive. In 1990, \$110.5 billion in U.S. exports was shipped by air. This was equivalent to more than 28% of the total value of U.S.

exports for that year. It is noteworthy that 69% of the dollar value of pharmaceutical exports, 33% of the dollar value of printed books and newspapers exported, 56% of the dollar value of electrical machinery exported, 70% of the dollar value of optical, photographic and medical instruments exported and 96% of the dollar value of exported works of art was shipped by air. These statistics are summarized in Table 2-1.

TABLE 2-1
Volume and Dollar Amount of Air Freight Exports,
by Commodity, 1990

<i>Commodity</i>	<i>Volume¹</i>	<i>Dollar Amount²</i>	<i>% of Total Volume of Exports³</i>	<i>% of Total Dollar Amount of Exports⁴</i>
Organic Chemicals	34,561	\$2,142,030	0.4	18.4
Pharmaceutical Products	19,039	1,865,286	20.6	68.6
Miscellaneous Chemicals	25,215	932,500	1.8	19.3
Plastics	54,386	765,324	1.4	6.9
Printed Books, Newspapers	42,825	1,057,758	33.2	33.0
Nuclear Reactors, Boilers	356,397	36,577,148	14.1	49.0
Electric Machinery	174,722	25,190,453	22.1	56.1
Vehicles, Except Railway	63,531	1,343,817	4.6	4.2
Aircraft, Spacecraft	32,873	8,850,338	50.8	29.0
Optical, Photographic, Medical Equipment	86,155	12,285,835	43.1	69.9
Arms and Ammunition	5,007	828,096	11.0	35.0
Works of Art	3,079	4,095,013	62.7	96.4
Total	897,790	95,933,598	4.5	39.9
Total All Exports	1,532,785	110,471,345	0.4	28.1
Percent of Total	58.6%	86.8%		

¹Metric tons

²Thousands of dollars

³Total volume includes metric tons shipped by air and water

⁴Total dollar amounts include value of shipments by air and water

Source: U.S. Bureau of the Census

Export volumes are expected to increase during the 1990s and air cargo traffic is expected to account for a larger share of international flows, particularly for high-value technological products.

Air freight also plays a significant role in U.S. imports. Almost 1.7 million metric tons valued at \$90.9 billion were imported by air in 1990. Air freight was particularly significant for imports of organic chemicals, pharmaceuticals, electrical machinery, optical, photographic and medical equipment, clocks and watches and works of art. In 1990, for example, 75% of all clocks, watches and pharmaceutical products imported into the United States were shipped by air. These findings are summarized in Table 2-2.

TABLE 2-2
Volume and Dollar Amount of Air Freight Imports,
by Commodity, 1990

<i>Commodity</i>	<i>Volume¹</i>	<i>Dollar Amount²</i>	<i>% of Total Volume of Imports³</i>	<i>% of Total Dollar Amount of Imports⁴</i>
Organic Chemicals	14,776	\$2,073,591	0.4	25.9
Pharmaceutical Products	8,967	1,182,652	19.9	75.4
Leather Products	27,718	1,056,961	8.7	25.7
Apparel	265,408	7,057,052	20.5	30.7
Footwear	68,723	1,343,152	8.3	14.0
Tools, Cutlery	11,053	510,176	4.5	26.1
Nuclear Reactors, Boilers	233,102	20,707,061	5.7	31.1
Electric Machinery	182,940	19,982,775	8.1	34.4
Vehicles, Except Railway	44,451	768,348	0.6	1.0
Aircraft, Spacecraft	6,994	1,692,049	31.2	26.5
Optical, Photographic, Medical Equipment	68,469	6,336,580	20.9	47.7
Clocks and Watches	6,044	1,329,523	20.7	75.4
Toys, Games and Sporting Goods	26,748	692,074	2.8	8.2
Works of Art	4,369	1,987,260	25.5	85.9
Total	969,762	66,719,254	4.6	23.9
Total All Imports	1,665,133	90,911,717	0.3	18.4
Percent of Total	58.2%	73.4%		

¹Metric tons

²Thousands of dollars

³Total volume includes metric tons shipped by air and water

⁴Total dollar amounts include value of shipments by air and water

Source: U.S. Bureau of the Census

Regulatory Changes: The Impact of Deregulation on the Air Cargo Industry

The U.S. commercial air-cargo industry was regulated by the *Civil Aeronautics Board* (CAB) until 1977. On November 9, 1977, passage of Public Law 95-163 deregulated the air cargo industry. The law eliminated CAB restrictions for all companies engaged in air cargo operations within the United States. It permitted unrestrained entry by new operators, complete pricing freedom, new service innovations and vertical integration. Vertical integration allowed freight forwarders to own and operate their own airlines.

THE INDUSTRY BEFORE DEREGULATION. Prior to the 1950, all-cargo carriers dominated the air cargo business. During the 1950s, large passenger/combo carriers entered the business. They obtained fleets of freighter or quick change aircraft and provided significant competition for U.S. all-cargo airlines. The combination carriers had greater financial strength than the all-cargo airlines because they were able to cross-subsidize between their passenger and cargo operations. They also offered day and night service because they were able to combine the schedules and capacity of their passenger aircraft and freight operations.

Air freight forwarders such as Airborne, Emery, and UPS were another major element of the air freight industry. They marketed, assembled and consolidated air cargo, provided pick-up and delivery service, and were responsible for the entire shipment from point of origin to point of destination. However, they did not fly their own planes. The freight forwarders utilized both the all cargo airlines and the combination carriers for the line-haul portion of the trip. In 1970, there were approximately 250 certificated U.S. air freight forwarders. The ten largest accounted for more than 50% of total forwarder traffic.

The all-cargo operations of U.S. domestic airlines consistently lost money during the early-to-mid-1970s. Their competitive position was adversely affected by the artificially low domestic freight rates set by the CAB and by the sharp increases in fuel prices caused by the Arab oil boycott of 1973-74. Moreover, the growing use of wide-body passenger aircraft, which contained significant belly cargo ca-

capacity, caused overcapacity within the industry. Revenue losses led to a 50% decline in domestic all cargo service. Freight forwarders could no longer obtain the necessary volume of overnight lift and decided to provide their own dedicated lift capacity. Deregulation made this possible.

THE INDUSTRY AFTER DEREGULATION. After deregulation, the small package express market came to be dominated by the integrated air express carriers. In 1990, the five largest integrated air express carriers were Airborne Express, Burlington Air Express, CV/Emery Worldwide, Federal Express, and UPS. The integrated air carriers started with the overnight delivery of envelopes and letters and moved on to small package shipments and even larger shipments. In 1973, Federal express became the first integrated air carrier. Unlike their predecessors, the integrated carriers no longer depend on forwarders, consolidators, or other third parties to provide their traffic. They offer on-call pick-up service, Saturday service; residential coverage, money-back guarantees and automated billing. They make extensive use of *Electronic Data Interchange* (EDI). For example, Federal Express has a highly-integrated communications system that links flight operations, ground services, customer services and shipment tracing. This system makes it possible to re-route planes and to determine the status of each package within seconds. Much of the recent expansion of the U.S. freighter fleet reflects the expansion of the integrated air express segment of the industry. The existence of such services has helped to foster economic growth in small, formerly-rural communities. For example, high-technology manufacturing plants have been able to relocate to rural areas with lower production costs precisely because of the availability of regular express transportation.

Passenger airlines continue to dominate the airport-to-airport movement of large shipments. Approximately 60% of all air cargo is carried as belly cargo on scheduled airlines. However, domestic revenue ton-miles flown by these airlines have declined by more than 10% since 1977 while international ton miles flown have increased by more than 50%.

Table 2-3 summarizes recent trends in the U.S. airline freight traffic. In the domestic market, the express carriers experienced the fastest growth during the 1980-88 period, more than 35% annually. The entire domestic market expanded at an average annual rate of about 8%. In terms of revenue ton miles, the international market expanded at an average rate of 9% annually during the 1980-88 period. The revenue ton miles of charter airlines serving the international market expanded at an average annual rate of more than 11% during this period.

TABLE 2-3
Changes in Revenue Ton Miles Flown by U.S. Airlines, 1980-88
(Millions)

	-----YEAR-----		Average Annual % Change
	1980	1988	
Domestic Revenue Ton Miles			
Scheduled Airlines	3,273	3,660	+1.4
Charter Airlines	291	251	-1.8
Express Carriers	312	3,543	+35.5
Total	3,876	7,453	+8.5%
International Revenue Ton Miles			
Scheduled Airlines	2,466	4,788	+8.6
Charter Airlines	508	1,191	+11.2
Total	2,974	5,979	+9.1%
Domestic and International			
Scheduled Airlines	5,739	8,447	+5.0
Charter Airlines	799	1,442	+7.7
Express Carriers	312	3,542	+35.5
Total	6,850	13,432	+8.8%

Source: Boeing, *World Air Cargo Forecast*

U.S. carriers currently face stiff competition in the market for international air cargo. Air Canada, KLM, Lufthansa, Japan Air Lines and Korean Air Lines have expanded their all cargo and combination fleets. As a result, the share of air cargo traffic to and from the United States carried by U.S. airlines declined from 42% to 31% between 1975 and 1986. Of the top ten freight carriers in 1989, seven were foreign

flag carriers. Several foreign carriers have opened major new cargo terminals at U.S. airports.

In 1990, twenty-five airlines carried 80% of world air cargo. Only four of them were all cargo airlines. Two of these — Federal Express and UPS — are based in the United States. In 1990, the three largest cargo fleets were operated by Federal Express (259 planes), Aeroflot (251 planes) and UPS (135 planes). These three carriers flew over 80% of the cargo planes operated by the top twenty-five cargo-carrying airlines.

According to the U.S. Department of Transportation, which analyzed recent changes in the international air cargo market, U.S. carriers remain strong in many international markets, but have not participated in market growth to the same extent as their foreign competitors. For example, in 1975, U.S. carriers transported 21% of the world's air cargo. Ten years later, they carried only 14%.²

This decline reflects the aggressive development of air freight services by other countries whose economies have been growing faster than ours. With the exception of Northwest Airlines, most foreign competitors have emphasized freight revenues to a greater extent than U.S. combination carriers. On average, foreign airlines earn more than three times as much from freight as their U.S. counterparts.

The U.S. Department of Transportation has identified several constraints on U.S. air cargo operations. They note that a principal factor behind the declining U.S. share of global air cargo is the withdrawal of freighter capacity by U.S. carriers without any compensating increase in scheduled combination carrier service.

The net result is that U.S. cargo carriers are facing more intense international competition just as international trade is becoming a more significant component of the U.S. economy. Given this situation, the U.S. Department of Transportation has concluded that:

.....Advancing air cargo policy goals has taken on increased importance.

A competitive air cargo industry has widespread ramifications. For example, there is a symbiosis between expanded

air freight operations and such urban development projects as duty-free foreign trade and manufacturing zones. The availability of international freight capacity is a key element in attracting community investment. An efficient, competitive air freight industry promotes U.S. trade and generates jobs. The availability of a viable charter cargo industry serves U.S. national security goals because it gives the United States added capability to respond quickly to emergency situations around the world.

These considerations suggest that any developments that strengthen the U.S. air cargo industry would be a positive development not only in terms of regional economic interests but also in terms of national interests.

Recent Technological Developments

Technological innovations that led to rapid increases in the effective payload capacity of freighter aircraft were also responsible for the rapid growth of air cargo traffic. Boeing developed the B757-200F aircraft to replace the B707 and the B727 aircraft. It is suitable for medium and long-range flights in domestic and international markets and has an effective payload of 75,000 pounds.

In 1993 the first Boeing B747-400F will enter service. It has a payload capacity of 245,000 pounds and is designed to replace the B747-200F.

The European airplane production consortium, Airbus Industrie, has developed all cargo and convertible versions of its A300-600 aircraft. It is a two-engine plane with a maximum payload capacity of 110,000 pounds.

The cargo planes with the highest payload capacities are the AN-124 and the AN-225 which were designed by Russia's Antonov Design Bureau. The AN-124 carries a maximum payload of 330,690 pounds over a range of 3,975 miles. The AN-225 carries a payload of up to 551,150 pounds over 2,800 miles.

In the last two decades, the maximum payload capacity of freighter aircraft has more than doubled.

The Future of the Air Cargo Industry

It is anticipated that during the 1990s, world air cargo will grow at a 6.7% average annual rate. The U.S. domestic market, which currently generates \$22 billion annually in shipments and which accounts for 20% of global air cargo, is expected to double by 1995.³ Asian markets are expected to grow by as much as 8.5% annually. Intra-European markets are expected to grow by 5.5% annually.

Aircraft capacity will probably keep pace with demand. The world's freighter fleet is expected to grow from 778 in 1990 to 1,652 in the year 2005. The air cargo industry currently has significant overcapacity. Unused belly and combination cargo capacity currently averages between 40% and 50%. By the time current capacity is reached, it is anticipated that new aircraft will be on line and ready to absorb additional growth.

In the future, domestic and international carriers will provide the full range of air cargo services. These include:

- *Domestic Air Cargo Service* - Air cargo service to and from U.S. airports.
- *International Air Cargo Service* - Air cargo service to and from airports worldwide.
- *Counter-to-Counter Service* - Same day or next day service by passenger air carriers. Delivery and pick-up of cargo is done at passenger check-in counters.
- *Overnight Packages/Envelopes* - Next day delivery of small packages and envelopes, a service offered by integrated air carriers such as Federal Express.
- *Overnight Freight* - Next-day delivery of heavy freight, a service offered by integrated air carriers, passenger air carriers, and all-cargo carriers.
- *Deferred Packages* - Second-day or later economy delivery service for small packages and envelopes, a service offered by integrated air carriers, passenger air carriers, and all-cargo carriers.
- *Deferred Freight* - Second-day or later economy delivery service, a service offered by all-cargo carriers, passenger air carriers and some integrated air carriers.

- *On-Demand Air Taxi* - A chartered aircraft service for all types of freight using a dedicated aircraft operating on demand in response to a customer's schedule.

The Case For Separate Regional Air Cargo Centers: Facilities Required

Airport congestion is a major problem. Airline deregulation has culminated in a boom in airline passenger traffic which is straining airport capacity. Major metropolitan airports, which serve as connecting points or hubs for converging traffic routes, have borne the brunt of this growth in demand. The FAA estimates that twenty-one major airports now experience severe chronic delays in operations as a result of traffic congestion. An estimated forty-seven airports could experience such congestion by the year 2000. Moreover, delays at major airports ripple outward to secondary airports, whose flights connect to these hubs, so that the entire air transportation network is impacted.

Congestion and delay could be ameliorated by using existing airport facilities more efficiently. Another option is to develop regional air cargo airports. This concept has gained adherents because integrated, small-package express carriers have been successful in relocating their operations to smaller, less congested airports. The integrated carriers were successful in this endeavor because they have a self-feeding network of door-to-door pickup and delivery services. Therefore, they are not as dependent on any one location as the traditional air cargo operators. The latter interact with the shippers, forwarders, brokers, and consolidators at major metropolitan airports. Their operations would be less efficient if any part of the operation were moved to another location.

The following arguments have been made in favor of separate air cargo centers:

- They would free up airport capacity at major hub airports. All cargo operations are separate from passenger operations so that they could be moved to a less-congested airport. This would free up take-off and landing facilities, valuable ramp space, and runway time at major hub airports for passenger aircraft. Moreover, cargo warehouses and handling facilities would no longer occupy potential passenger terminal space. In addition, since general aviation operations can easily coexist with all-cargo operations, separate cargo airports could siphon off general aviation aircraft thereby

freeing up slots at major hub airports for use by passenger air carriers. The other side of the coin is that more than half of all air cargo is carried in the baggage holds of scheduled airlines. It would be difficult and inefficient to separate cargo from passenger operations for this segment of the air cargo industry.

- Separate cargo airports could also encourage economic development. In recent years, there has been growing integration of air cargo transportation with manufacturing and distribution operations. Efficiency is served when all three functions are consolidated at a single location. Thus, a separate air cargo facility can function as a stimulus for local economic development. Such a facility would be particularly attractive to industries that are related to the aviation industry, industries that utilize just-in-time inventory control systems or industries that import or export perishable goods to overseas markets.

In order to support a regional air-cargo center, an airport must provide certain basic facilities. Since international operations will be a growing segment of the air cargo market, any potential cargo airport must have runways that are 10,000 to 12,000 feet long and 150 feet wide. These runways must be strong enough to support the take-off of a fully-loaded freighter on a long-haul, non-stop intercontinental flight. Runways and taxiways must be able to support very heavy aircraft. For example, Boeing's 747-400F freighter, its newest cargo plane, has a maximum takeoff weight of 870,000 pounds.

A regional air-cargo airport must provide continuing, reliable operations during poor weather conditions. The facilities needed to assure such operations are an air traffic control tower, an airport surveillance radar, an appropriate instrument landing system and associated landing lights.

The airport must also have the apron space and cargo buildings to accommodate the cargo operators, customs service, brokers and freight forwarders. Ideally, it should have convenient access to highway and rail transportation. Modern high-capacity telephone trunking and switching systems are needed as are environmentally-approved waste-disposal systems and adequate electric power and water for current and future needs. An adequate labor force containing at least semi-skilled workers is also needed.

PART TWO

The Aviation and Air Cargo Industry in the New York Region

The Aviation Industry The aviation industry is defined as those regional economic activities directly related to the movement of passengers or cargo by air. This includes on-airport activities, such as the operation of domestic and foreign airlines, as well as off-airport activities such as air travel agencies, passenger and cargo transportation, and other trade-related services. In a December, 1991 study, the Port Authority of New York and New Jersey estimated that the aviation industry generated economic activity valued at \$22.2 billion in 1990 dollars within the seventeen-county New York Metropolitan Region.⁴ In 1990, the aviation industry generated 243,700 regional jobs of which 143,300 were directly related to the industry. Of these direct jobs, 63,600 or 44% of the total, were located at one of the region's three major regional airports — Kennedy, LaGuardia or Newark — and 79,700 were off-airport jobs. In 1990, the aviation industry injected \$6.6 billion into the region's economy in the form of wages and salaries. The aviation industry accounted for 3.2% of the region's Gross Regional Product in 1990. The direct, indirect and induced job and wage impacts of the aviation industry are summarized in Table 2-4.

Of the three regional airports, Kennedy Airport had the greatest economic impact. Of the 243,700 jobs generated by the aviation industry, 173,100 or 71% of the total were associated with Kennedy Airport. Newark Airport accounted for 16% of the total employment impact and LaGuardia for 13%. The contribution of each of these airports to the region's economy is summarized in Table 2-5.

The Port Authority study was confined to their three regional airports — Kennedy, Newark and La Guardia. Studies funded by the New York State Department of Transportation and performed by Wilbur Smith Associates show that Long Island's airports — Republic, Long Island MacArthur,

TABLE 2-4
The Direct, Indirect and Induced Job and Wage Impacts of the Aviation Industry in the New York Metropolitan Region, 1990

	Jobs	Wages & Salaries (\$Millions)
Direct Impact		
On and Off Airport	143,300	\$4,400
Indirect and Induced Impacts		
Eating and Drinking Places	20,700	229
Business Services	19,500	399
Wholesale and Retail Trade	18,200	283
Health and Medical Services	9,300	176
Other Transportation	6,300	166
Finance and Insurance	5,300	144
Hotel and Personal Services	4,200	48
Communications (Except Radio & TV)	3,200	492
Operations and Maintenance	2,900	83
Real Estate and Rental	2,900	49
Other	7,900	131
Subtotal	100,400	2,200
Total	243,700	6,600

Source: Port Authority of New York and New Jersey

TABLE 2-5
The Contribution of Kennedy, Newark, and LaGuardia Airports to the New York Region's Economy, 1990

Airport	No. of Jobs Generated	Regional Sales (\$ Billions)	Wages & Salaries (\$ Billions)
Kennedy	173,100	\$15.8	\$4.8
Newark	39,200	3.5	1.0
LaGuardia	31,400	2.9	0.8
Total	243,700	22.2	6.6

Source: Port Authority of New York and New Jersey

Brookhaven, East Hampton and Suffolk County — have a substantial impact upon the Long Island economy. In 1990, these five airports generated \$716.5 million in direct and indirect economic impacts.

Long Island MacArthur Airport, owned by the Town of Islip, had by far, the greatest impact on the Long Island economy. It is a full service airport offering airline and charter passenger services, passenger terminal services, corporate and other general aviation flying, and aircraft maintenance and storage facilities. The airport was serviced by six airlines in 1990 and served an estimated 845,000 passengers. Approximately 365 aircraft were based at the airport. The airport accommodated 124,391 takeoffs and landings in 1990 of which 104,463 represented general aviation operations. In 1990, Long Island MacArthur Airport generated almost \$610 million annually for Islip and surrounding Long Island. Of this amount, \$135.4 million was in the form of on-airport impacts. This included \$124.6 million in air transportation revenues, \$7.1 million in airport-based auto rental business and \$3.0 million in building construction. The airport generated an additional \$189.9 million in off-airport business. This included \$58.1 million in lodging revenues, \$49.0 million in food and beverage sales, \$22.2 million in retail sales, \$15.0 million in entertainment revenues and \$13.1 million in ground transportation revenues. Virtually all Long Island industries benefitted by providing goods and services to the airport. In 1990, the transportation industry provided almost \$182 million in goods and services to the airport. The business services industry received \$31.5 million in revenues as a result of airport operations. The airport was responsible for an estimated 8,609 jobs within the Long Island economy of which 2,091 were located at the airport itself. These jobs generated almost \$179 million in salaries, which was equivalent to an average annual salary of about \$20,782.

Republic Airport had the second most significant impact on the Long Island economy. The airport, owned by New York State, is a general aviation airport which offers both corporate and private aviation. In 1990 the airport generated on-airport business of \$31.1 million and off-airport business of almost \$8.2 million. The ripple effect of these impacts brought the total annual impact of the airport to almost

\$72 million. The airport generated an estimated 883 Long Island jobs which in turn generated an annual payroll of more than \$20 million.

The economic impact of Long Island's five airports as of 1990 is summarized in Table 2-6.

TABLE 2-6
The Economic Impact of Long Island's Airports, 1990
(\$ Thousands)

<i>Airport</i>	<i>On-Airport Impacts</i>	<i>Off-Airport Impacts</i>	<i>Related Impacts</i>	<i>Annual Impacts</i>
Republic	\$31,149	\$8,158	\$32,683	\$71,990
Long Island MacArthur	135,362	189,920	281,143	606,425
Brookhaven	2,256	1,234	3,014	6,504
East Hampton	4,901	7,817	11,359	24,077
Suffolk County	2,315	1,727	3,425	7,467
Total	175,983	208,856	331,624	716,463

Source: Wilbur Smith Associates

The Air Cargo Industry

The air cargo industry encompasses a broad array of facilities and services including ground support services, lift capacity, warehousing facilities, customs clearance and brokerage services. Approximately 1.9 million tons of air cargo valued at \$90 billion passed through the Port Authority's three regional airports in 1990. The Port Authority estimates that air cargo activities account for almost 40% of the aviation industry's total impact on the New York Metropolitan Region. As of 1990, the air cargo industry was responsible for 97,960 regional jobs, \$8.5 billion in regional sales, and \$2.7 billion in regional wages and salaries. Approximately 57,890 jobs were directly related to the air cargo industry. These jobs generated \$1.9 billion in wages and salaries. The regional economic impact of the air cargo industry is summarized in Table 2-7.

Some air cargo activities occur at the three regional airports. These include cargo handling, freight forwarding and warehousing. Collectively, such on-airport activities were responsible for almost \$1.0 billion in total sales, \$400 million

TABLE 2-7
The Economic Impact of the Air Cargo Industry on the New York Metropolitan Region, 1990

	<i>Direct Impact</i>	<i>Indirect Impact</i>	<i>Total Impact</i>
Sales (\$ Billions)	\$5.4	\$3.1	\$8.5
Wages & Salaries (\$ Billions)	1.9	0.8	2.7
Employment	57,890	40,070	97,960

Source: Port Authority of New York and New Jersey

in wages and salaries and almost 12,000 jobs in 1990. A number of related activities such as trucking, wholesaling and distribution of cargo and warehousing occur off-airport. These off-airport activities together with their indirect and induced effects accounted for almost 90% of the economic impact of the air cargo industry in the New York Metropolitan Region. This translates into \$7.6 billion in sales, \$2.3 billion in wages and salaries, and 86,260 jobs.

AIR CARGO TONNAGE: RELATIVE RANKING. Of the top fifteen U.S. cargo airports, Kennedy Airport ranked first in 1990 in terms of tonnage handled. The airport handled more than 1.45 million short tons of revenue cargo⁵ in 1990. Los Angeles International Airport, which handled 1.28 million short tons, ranked second. Newark International Airport, which handled almost 557 thousand short tons ranked tenth. LaGuardia Airport was not one of the top fifteen cargo airports. These results are summarized in Table 2-8.

AIR REVENUE FREIGHT: A HISTORICAL PERSPECTIVE. In the aggregate, the three regional airports handled almost 1.9 million short tons of revenue freight in 1990, a 41% increase when compared with the more than 1.34 million short tons handled in 1977. The volume of revenue freight handled by Kennedy Airport increased from 1.19 million short tons in 1977 to 1.33 million in 1990, a 12% increase. LaGuardia, which had the smallest air freight operation of the three regional airports, experienced an increase in tonnage from 48.9 thousand short tons in 1977 to almost 70.8 thousand in 1990. This was equivalent to a gain of 45%. Newark Airport was characterized by the fastest growth of air freight of the three regional airports. Its tonnage increased from 108.7

TABLE 2-8
The Top Fifteen U.S. Airports Ranked by Revenue Cargo, 1990

<i>Airport</i>	<i>Location</i>	<i>Revenue Cargo, 1990 (\$hort Tons)</i>	<i>Rank</i>
Kennedy International	New York, NY	1,458,053	1
Los Angeles International	Los Angeles, CA	1,283,748	2
O'Hare	Chicago, IL	1,087,314	3
Miami International	Miami, FL	1,065,020	4
Standiford Field	Louisville, KY	844,138	5
Hartsfield Atlanta International	Atlanta, GA	672,716	6
San Francisco International	San Francisco, CA	623,807	7
DFW International	Dallas-Ft. Worth, TX	613,537	8
Dayton International	Dayton, OH	607,647	9
Newark International	Newark, NJ	556,758	10
Philadelphia International	Philadelphia, PA	444,836	11
Honolulu International	Honolulu, HI	413,141	12
Boston-Logan International	Boston, MA	401,431	13
Baer Field	Fort Wayne, IN	374,255	14
Indianapolis International	Indianapolis, IN	337,330	15

Source: Port Authority of New York and New Jersey

thousand short tons in 1977 to 495.4 thousand in 1990. Thus, Newark handled 4.6 times as much tonnage in 1990 as it did in 1977.

During this period, international shipments accounted for most of the growth in revenue freight tonnage handled by the three airports. International tonnage handled at these airports increased from 664.8 thousand short tons in 1977 to 1.0 million in 1990, a gain of almost 51%. At the same time, domestic tonnage increased from 683.9 short tons to 896.1 short tons, a gain of only 31%. Whereas domestic tonnage handled by the region's airports exceeded international tonnage handled by 3% in 1977, international tonnage exceeded domestic tonnage by 12% as of 1990.

Kennedy Airport lost ground in terms of domestic air freight during the 1977-90 period. The volume of domestic freight handled by Kennedy declined from 527.6 thousand short tons to 392.7 thousand short tons between 1977 and 1990, a drop of about 25%. This decline was more than offset by an

increase in international air freight handled at Kennedy. Kennedy's volume of international shipments increased from 663.5 thousand short tons in 1977 to 938.5 thousand short tons in 1990, an increase of 41%. Both domestic and international revenue freight increased at Newark and LaGuardia Airports during the 1977-90 period.

The region's revenue freight shipments for the 1977-90 period are summarized in Table 2-9. The findings attest to the important role of the New York Metropolitan Region in domestic commerce and its increasingly pivotal role in international commerce.

EXPORTS AND IMPORTS, BY COMMODITY. Given the growing importance of international air freight, it is useful to determine which commodities dominate exports and imports shipped by air to and from the New York Custom's District and how air freight through the New York Custom's District relates to total U.S. air freight.

In 1990, exports totaling 405,094 metric tons were shipped by air through the New York Custom's District. These exports were valued at more than \$36.5 billion. The New York Custom's District accounted for more than 26% of the total tonnage exported by air from the United States in 1990. The New York Custom's District accounted for one-third of the dollar value of total U.S. air exports in 1990.

Several commodities dominated air exports through the New York Custom's District. These included:

- organic and other chemicals
- pharmaceutical products
- plastics
- fish and other crustaceans
- paper and paperboard
- printed books and newspapers
- apparel
- electrical machinery
- optical, photographic and medical equipment

Air freight accounted for at least 30% of total tonnage exported through the New York Custom's District for each of the following commodities: fish, pharmaceuticals, printed books and newspapers, apparel, electrical machinery, aircraft and spacecraft, and optical, photographic and medical equipment. Air freight accounted for at least three-quarters of the total dollar value of exports through the New York Custom's District for pharmaceuticals, printed books and newspapers, nuclear reactors and boilers, electrical machinery, aircraft and spacecraft and optical, photographic, and medical equipment. Approximately 72% of the total dollar value of 1990 exports through the New York Custom's District was shipped by air. These findings are summarized in Table 2-10.

In 1990, imports totalling 529,325 metric tons entered the New York Custom's District by air. These imports were val-

TABLE 2-9
Revenue Freight, by Airport, 1977-90, The New York Metropolitan Region
(Short Tons)

• Year	DOMESTIC FREIGHT			INTERNATIONAL FREIGHT			TOTAL FREIGHT		
	JFK	Newark	LaGuardia	JFK	Newark	LaGuardia	JFK	Newark	LaGuardia
1977	527,584	107,392	48,936	663,499	1,281	—	1,191,083	108,673	48,936
1980	456,592	105,749	35,257	713,223	1,418	—	1,169,815	107,167	35,257
1985	296,373	260,109	53,573	783,981	14,007	520	1,080,354	274,116	54,093
1990	392,730	435,538	67,851	938,452	59,869	2,941	1,331,182	495,407	70,792

Source: Port Authority of New York and New Jersey

TABLE 2-10
Volume and Dollar Amount of Exports Shipped by Air Through
the New York Custom's District, 1990
by Commodity

<i>Commodity</i>	<i>Volume¹</i>	<i>Dollar Amount²</i>	<i>% of Total Volume of Exports³</i>	<i>% of Total Dollar Amount of Exports⁴</i>
Fish, Crustaceans	11,110	\$73,032	31.7	55.8
Organic Chemicals	11,411	945,378	7.8	67.7
Pharmaceutical Products	6,001	709,907	43.7	88.1
Miscellaneous Chemicals	6,988	218,947	7.1	41.3
Plastics	16,938	293,369	5.4	26.9
Paper and Paperboard	12,682	40,792	10.2	16.6
Printed Books, Newspapers	14,093	539,460	33.2	75.0
Apparel	6,693	186,642	47.2	64.1
Nuclear Reactors, Boilers	91,919	10,516,391	27.6	77.4
Electrical Machinery	51,576	5,836,037	37.0	85.9
Vehicles, Except Railroad	7,723	248,126	6.0	17.9
Aircraft, Spacecraft	10,517	2,736,187	64.2	88.9
Optical, Photographic, Medical Equipment	25,995	3,492,333	43.6	81.1
Total	273,646	25,836,601	18.7	75.2
Total Exports-NY	405,094	36,473,219	5.5	71.6
Total Exports-US	1,532,785	110,471,345		
NY/US	26.4%	33.0%		

¹Metric tons

²Thousands of dollars

³Total volume includes metric tons shipped by air and water

⁴Total dollar amounts include value of shipments by air and water

Source: Port Authority of New York and New Jersey

ued at more than \$30.8 billion. The New York Customs District accounted for almost 32% of the total tonnage of U.S. imports shipped by air in 1990. The District accounted for almost 34% of the dollar value of U.S. Imports shipped by air in 1990.

The following commodity groups dominated U.S. Imports shipped by air through the District in 1990:

- fish and vegetables,
- organic chemicals,

- plastics,
- leather,
- apparel and footwear,
- printed books and newspapers,
- nuclear reactors, boilers,
- electrical machinery,
- vehicles,
- optical, photographic, medical equipment
- toys, games, sporting equipment

Air freight accounted for at least one-quarter of the total tonnage imported through the New York Custom's District in each of the following commodities: leather, printed books and newspapers, apparel, footwear and optical, photographic and medical equipment. Air freight accounted for at least 40% of the total dollar value of imports through the New York Custom's District for each of the following commodities: organic chemicals, leather, apparel, footwear, nuclear reactors, boilers, electrical machinery and optical, photographic and medical equipment. Approximately 47% of the dollar value of 1990 imports through the New York Custom's District was shipped by air. These findings are summarized in Table 2-11.

EXPORTS BY DESTINATION, IMPORTS BY PLACE OF ORIGIN. In evaluating the role of international trade within the New York region's economy, it is useful to identify the destinations of exports that flow through the New York Custom's District and the geographic origins of imports that enter the United States through the New York Custom's District.

In 1990, 55% of all export tonnage leaving the New York Custom's District by all modes went to Europe, 33% went to Asia, 7% to Latin America and the remaining 5% to other destinations. Asian markets were more significant in 1990 than in 1985. For example, in 1985, Europe accounted for 57% of total export tonnage moving through the New York Custom's District, Asian countries for 28%, Latin American countries for 9% and other destinations for the remaining 6%.

TABLE 2-11
Volume and Dollar Amount of Imports Shipped by Air Through
the New York Custom's District, 1990
by Commodity

<i>Commodity</i>	<i>Volume¹</i>	<i>Dollar Amount²</i>	<i>% of Total Volume of Imports³</i>	<i>% of Total Dollar Amount of Imports⁴</i>
Fish, Crustaceans	21,628	\$103,972	17.7	18.0
Vegetables	16,828	26,642	23.9	28.9
Organic Chemicals	7,615	1,022,482	1.6	44.0
Plastics	13,193	175,744	3.9	15.2
Leather	14,476	570,604	25.9	63.4
Printed Books, Newspapers	17,223	165,608	24.9	37.1
Apparel	128,431	3,842,865	49.7	67.5
Footwear	29,015	781,820	25.2	42.3
Nuclear Reactors, Boilers	51,977	3,256,177	14.2	47.5
Electrical Machinery	37,982	2,650,622	17.9	60.0
Vehicles, except Railway	8,025	141,613	1.9	3.5
Optical, Photographic, Medical Equipment	26,695	2,406,501	40.4	73.8
Toys, Games, Sporting Equipment	6,851	162,053	6.5	21.6
Total	379,939	15,306,703	14.2	47.3
Total Imports-NY	529,325	30,830,962	1.2	46.5
Total Imports-US	1,665,133	90,911,717		
NY/US	31.8%	33.9%		

¹Metric tons

²Thousands of dollars

³Total volume includes metric tons shipped by air and water

⁴Total dollar amounts include value of shipments by air and water

Source: Port Authority of New York and New Jersey

In 1990, approximately 51% of all import tonnage arriving through the New York Custom's District came from Europe, 40% from Asia, 8% from Latin America, and 1% from other areas. Imports from Asia became more significant during the 1985-90 period. In 1985, for example, Europe was the place of origin for 55% of the tonnage imported through the New York Custom's District and Asian countries were responsible for only 35% of the total. These findings are summarized in Table 2-12.

The Port Authority's Office of Business Development has compiled information about the countries of origin and destination for airborne imports and exports. In 1990, Germany was New York's leading source of airborne imports. Italy ranked second, the United Kingdom third, Japan fourth, and Hong Kong fifth. In 1990, Japan was the principal destination for airborne exports through the Port of New York. The United Kingdom was a close second followed by Germany, France, and Italy. These findings are shown in Table 2-13.

THE ISSUE OF CONGESTION AT NEW YORK REGIONAL AIRPORTS. In order to evaluate the need for and the feasibility of a regional air cargo center at Calverton Airport, it is necessary to determine whether all-cargo flights currently impinge upon passenger flights at the three regional airports — Kennedy, LaGuardia, and Newark, to what extent all-cargo flights are causing operational delays at these airports, and to what extent the physical infrastructure at these airports can handle existing cargo operations.

TABLE 2-12
Revenue Freight Flowing Through the New York Custom's District, 1985, 1990 (In Short Tons)

<i>Place of Origin of Imports</i>	<i>1985</i>	<i>Percent Distribution</i>	<i>1990</i>	<i>Percent Distribution</i>	<i>Destination of Exports</i>	<i>1985</i>	<i>Percent Distribution</i>	<i>1990</i>	<i>Percent Distribution</i>
Europe	351,000	54.8	296,000	50.8	Europe	163,000	57.0	246,000	55.0
Asia	222,000	34.7	232,000	39.8	Asia	80,000	28.0	146,000	32.7
Latin America	56,000	8.8	48,000	8.2	Latin America	27,000	9.4	32,000	7.2
Other	11,000	1.7	7,000	1.2	Other	16,000	5.6	23,000	5.1
Total	640,000	100.0	583,000	100.0	Total	286,000	100.0	447,000	100.0

Source: Port Authority of New York and New Jersey

TABLE 2-13
The Port of New York's Leading Sources of Airborne Imports
and Leading Markets for Airborne Exports, 1990
(In Long Tons)

SOURCES OF IMPORTS			MARKETS FOR EXPORTS		
Rank	Country	Tonnage	Rank	Country	Tonnage
1	Germany	53,103	1	Japan	49,923
2	Italy	41,728	2	United Kingdom	48,161
3	United Kingdom	39,934	3	Germany	32,278
4	Japan	33,663	4	France	30,634
5	Hong Kong	26,850	5	Italy	24,262
6	India	26,108	6	Netherlands	16,093
7	France	26,029	7	Brazil	14,433
8	Korea	22,523	8	Korea	13,405
9	People's Republic of China	22,256	9	Belgium & Luxembourg	11,468
10	Taiwan	21,864	10	Switzerland	10,869
11	Netherlands	21,534	11	Israel	10,748
12	Switzerland	16,570	12	Spain	9,588
13	Brazil	13,579	13	Singapore	9,484
14	Israel	10,749	14	Hong Kong	9,241
15	Norway	8,827	15	Taiwan	7,907

Source: Port Authority of New York and New Jersey

SCHEDULED AIR CARGO VERSUS PASSENGER PLANE MOVEMENTS. In 1991, scheduled air cargo plane movements accounted for only 4.6% of the combined total of scheduled cargo and scheduled passenger plane movements at Kennedy, LaGuardia and Newark Airports. Cargo flights accounted for 8.9% of such movements at Kennedy Airport, for 5.5% of such movements at Newark Airport and for only 0.1% of such movements at LaGuardia Airport.

At Kennedy Airport, scheduled cargo flights accounted for approximately 8% of the total number of scheduled domestic flights and for almost 10% of scheduled international flights. At Newark Airport, scheduled cargo flights accounted for 6% of scheduled domestic flights but for virtually none of the international flights.

These statistics are summarized in Table 2-14. The statistics compare scheduled all-cargo flights with scheduled pas-

senger flights. However, it should be remembered that many passenger flights accommodate substantial amounts of cargo in their holds. Therefore, scheduled passenger flights are, in effect, cargo flights.

MEASURES OF CONGESTION. Most studies have found that cargo operations contribute to delay only if they are flown by all-cargo aircraft during peak hours. A recent report to Congress, prepared by the Federal Aviation Administration, studied recent operational delays at major U.S. airports including Kennedy, LaGuardia and Newark. The report examined each of these airports' all-cargo operations in relation to their nominal hourly capacity under both *Visual Flight Rules* (VFR) and *Instrument Flight Rules* (IFR) conditions. The analysis was performed on an hourly basis on two days: November 28, 1990 and November 29, 1990.

The report concluded that Kennedy Airport exceeded its nominal VFR capacity, which is 82 operations per hour, during only three hours on November 28th and during only one hour on November 29th. The report, therefore concluded:

....Cargo operations do contribute to exceeding capacity in those hours, but this contribution is slight. Just over 2 percent of the total 90 operations at the busiest hour are due to all-cargo aircraft...This means that, at the busiest hour, there were only two all-cargo operations...About 90 percent of the cargo operations (at Kennedy) are scheduled for hours when the airport has ample capacity in good weather and bad.⁶

As for LaGuardia Airport, the report concluded that since LaGuardia has only one all-cargo flight per day, at 0600, cargo operations were not a factor in adding to congestion. The report concluded that at Newark Airport,

.....All-cargo operations contribute to exceeding capacity, but this contribution averages about three percent, less than (that caused by) general aviation...About 60 percent of the cargo operations at Newark are scheduled for hours when there is ample capacity in good weather and bad.⁷

Thus congestion resulting from all-cargo flights does not appear to be a significant problem at the region's three major airports.

TABLE 2-14
Summary Report of Airport Activities, 1991
Kennedy, LaGuardia and Newark Airports

<i>Plane Movements*</i>	<i>Kennedy</i>	<i>% of Total</i>	<i>LaGuardia</i>	<i>% of Total</i>	<i>Newark</i>	<i>% of Total</i>	<i>Regional Total</i>	<i>% of Total</i>
Domestic	101,454	100.0	233,577	100.0	252,975	100.0	588,006	100.0
Scheduled Passenger	87,665	86.4	231,645	99.2	235,344	93.0	554,654	94.3
Scheduled Cargo	8,123	8.0	338	0.1	15,188	6.0	23,649	4.0
Other	5,666	5.6	1,594	0.7	2,443	1.0	9,703	1.7
International	94,062	100.0	17,302	100.0	22,335	100.0	133,699	100.0
Scheduled Passenger	82,837	88.1	17,286	99.9	21,368	95.7	121,491	90.9
Scheduled Cargo	9,314	9.9	0	0.0	1	0.0	9,315	7.0
Other	1,911	2.0	16	0.1	966	4.3	2,893	2.1
Total	195,516	100.0	250,879	100.0	275,310	100.0	721,705	100.0
Scheduled Passenger	170,502	87.2	248,931	99.2	256,712	93.3	676,145	93.7
Scheduled Cargo	17,437	8.9	338	0.1	15,189	5.5	32,964	4.6
Other	7,577	3.9	1,610	0.7	3,409	1.2	12,596	1.7

*Note: Excludes scheduled commuter, air taxi and non-commercial plane movements.

Source: Port Authority of New York and New Jersey.

ON-GOING INFRASTRUCTURE IMPROVEMENTS RELATED TO CARGO OPERATIONS. All-cargo operations can also impinge on airport operations if the infrastructure at those airports is inadequate to handle them. There are several planned or ongoing infrastructure improvements at Kennedy and Newark Airports that will enable them to better handle their cargo operations. At Kennedy, these include construction of a 300,000 square foot cargo terminal for Japan Airlines, construction of a 200,000 square foot cargo terminal for Nippon Cargo Airlines, addition of an 80,000 square foot cargo facility for China Airlines, redevelopment of two additional airport areas for cargo use, and upgrading of the electronic data interchange (EDI) capability of the airport, including automated manifest systems for U.S. customs. The 200,000 square foot Hamlar Perishables Center, a multi-use perishables terminal, has just been com-

pleted at Kennedy Airport. It is designed to handle perishable cargos such as flowers, fruits, fish and vegetables as well as non-traditional perishables such as pharmaceuticals, medical diagnostic kits, resins, and oils. The new facility is expected to cause perishable cargo volume at Kennedy to rise by 15% to 20%.

Newark Airport is constructing a 320,000 square foot, multi-tenant cargo facility and is renovating an old passenger terminal to provide 380,000 square feet of additional cargo space.

These activities suggest that adequate cargo facilities will be available at these airports, at least for the foreseeable future. Therefore, a separate regional air cargo center at Calverton Airport cannot be justified solely to alleviate airport congestion at the three major regional airports.

A Case Study of a Separate Regional Cargo Facility: Stewart Airport

Stewart International Airport is a former U.S. Air Force base located an hour's drive time north of New York City at Newburgh, New York. Stewart has a 12,000-foot runway and a functioning instrument landing system. In addition, 9,960 acres of State-owned land are available for airport development. In terms of area, it is the second largest airport in the United States. Stewart has been marketing itself as an alternative to the major New York airports for both freight and passengers. The Federal Aviation Administration in a 1990 report, evaluated Stewart's success in reaching these goals.⁸ It concluded that despite a major land acquisition and improvement program sponsored by New York State, the airport has been slow to attract traffic.

Prior to 1983, New York State invested \$83 million in land acquisition and runway/taxiway improvements and the Federal Government invested \$2.2 million for runways and taxiways. In 1983, the airport was taken over by the New York State Department of Transportation. The DOT marketed the airport for commercial, cargo, corporate and general aviation users. The DOT also established an industrial park on airport property to attract large businesses. Since 1983, New York State has invested an additional \$35 million, primarily to develop the industrial park and other airport lands. In addition, the Federal government has invested \$155 million for an Air National Guard Base, \$30 million for a U.S. Postal Service Regional Mail Facility, and \$15 million for other airport improvements.

Today, Stewart contains several distribution centers, production plants, and other commercial activities. Stewart is a regional trucking hub for Consolidated Freightways/Emery operations. American Airlines began scheduled service to Stewart in April, 1990, and two other carriers — Delta and US Air — have followed. The airport is also served by several commuter airlines.

As of September, 1990, private investment related to the airport totalled nearly \$100 million. At that time, airport tenants paid rents and payments in-lieu-of taxes of about \$1 million annually. Major tenants include Anheuser-Busch, American Express, the Air National Guard, and Cessna. The airport is a major area employer and generates about 4,300 jobs.

The airport is currently expanding its cargo facilities. A new 200,000 square-foot cargo terminal is being built on 170 acres at the north end of the runway. Another 250,000 square-foot facility is planned for the south end. The airport is designed for both cargo and passenger operations. Its passenger terminal can handle 500 passengers an hour and it has a U.S. customs center for international flights.

In 1990, the FAA concluded:

...It is arguable whether Stewart is a success as a regional air-cargo center. Despite the advantage of a large investment by New York State and proximity to the New York metropolitan area, the airport has had relatively low activity historically, ranking 512 among U.S. airports in 1988 with 4,171 passengers and accounting for less than 1 percent of the cargo carried from the region.⁹

However, the advent of scheduled passenger service in 1990 improved Stewart's fortunes. Stewart has become the 43rd busiest cargo airport in the country.

Discussions with those familiar with Stewart's situation suggest that the major problems that Stewart faced in the 1980s were the same as those facing other airports which attempt to establish themselves as cargo hubs. That is, it is difficult to attract freight forwarders and to convince them to route freight to locations other than major airports where the bulk of freight, connecting carriers, and competition is located. This would appear to be a crucial test for a potential cargo facility at Calverton.

PART THREE

The Potential for Generating Air Cargo in the New York Region and on Long Island

This chapter analyzes the potential for generating air cargo for New York's three regional airports and specifically for a potential cargo airport at Calverton. The following methodology was used:

- Projections of domestic and international air cargo were made for the three regional airports — Kennedy, LaGuardia, and Newark — through the year 2000.
- Given the fact that the Calverton location lends itself to international trade, particularly with Europe, the region's dominant export commodities as of 1990 were analyzed.
- A detailed analysis of Long Island's current manufacturing base and that of New York City, southwestern New England, and the northern suburbs of Westchester, Rockland, Orange, Putnam, Dutchess and Ulster Counties was made to pinpoint potential geographic sources of the export commodities identified in previous paragraph.
- This was supplemented by interviews with Long Island firms actively engaged in international trade.
- These steps culminated in an assessment of the potential for generating air freight for a possible cargo facility at Calverton Airport.

Projected Air Cargo in the New York Region

Total revenue freight in the New York Region increased from 1.41 million short tons in 1985 to almost 1.90 million short tons in 1990, a gain of almost 35%. In 1985, Kennedy airport accounted for 77% of total air tonnage, Newark for about 19%, and LaGuardia for the remaining 4%. In 1990, Kennedy's share of total tonnage had declined to 70%, Newark's had risen to 26%, and LaGuardia's share remained at about 4%.

The Port Authority of New York and New Jersey projects that total tonnage flowing through Kennedy Airport will reach 1.76 million short tons in the year 2000, a 32% increase over the volume of air freight in 1990. Projections prepared by the Long Island Regional Planning Board suggest that Newark's volume could reach 990,000 short tons in the year 2000 and that LaGuardia's volume could reach 113,000 short tons. This would put total tonnage flowing through the three regional airports at about 2.86 million short tons in the year 2000. Of this volume, Kennedy's share would be 61%, Newark's share 35%, and LaGuardia's share would remain at about 4%. These projections envision a further increase in Newark Airport's share of the region's air cargo activity (See Table 2-15).

TABLE 2-15
Projected Revenue Freight at New York's Regional Airports
Year 2000
(in Short Tons)

Year	Kennedy	Newark	LaGuardia	Total
1980	1,169,815	107,167	35,257	1,312,239
1985	1,080,354	274,116	54,093	1,408,563
1986	1,096,365	296,560	50,504	1,443,429
1987	1,182,671	325,428	54,117	1,562,216
1988	1,300,886	449,829	56,489	1,807,204
1989	1,387,963	441,434	63,504	1,892,901
1990	1,331,182	495,407	70,792	1,897,381
2000 projected	1,760,000	990,000	113,000	2,863,000
% change, 1990-2000	+32.2%	+99.8%	+59.6%	+50.9%

Source: Port Authority of New York and New Jersey;
Long Island Regional Planning Board.

The projected growth of international air freight is of particular relevance for the Calverton Study because the location of Calverton Airport seems particularly well-suited to international air cargo flights, particularly flights destined for

European and Latin American markets. Total international revenue freight at New York's three regional airports increased from 798,508 short tons in 1985 to more than 1.0 million short tons in 1990, a gain of 25%. International shipments accounted for 57% of total regional air freight shipments in 1985 and for 53% of the total in 1990. In 1990, Kennedy Airport accounted for 94% of all international air cargo flowing through the New York Region and Newark for 6%. LaGuardia handled virtually no international air cargo.

The Port Authority of New York and New Jersey projects that the volume of international air freight handled by Kennedy Airport will rise to 1.23 million short tons in the year 2000, a 31% increase over Kennedy's 1990 volume of international freight. Given the growing importance of global markets, the Long Island Regional Planning Board projects that the volume of international shipments handled by Newark Airport could rise to 310,000 short tons by the year 2000. The total for all three regional airports could reach almost 1.55 million short tons in the year 2000. Thus, Kennedy's share of international air freight would be about 80%, down from 94% in 1990, and Newark's share would be about 20%, up from 6% in 1990. (See Table 2-16).

TABLE 2-16
Projected International Revenue Freight at New York's
Regional Airports, Year 2000
(In Short Tons)

Year	Kennedy	Newark	LaGuardia	Total
1980	713,223	1,418	—	714,657
1985	783,981	14,007	520	798,508
1986	808,801	20,514	735	830,050
1987	854,732	8,634	920	864,286
1988	941,397	31,824	3,822	977,043
1989	990,841	47,749	3,912	1,042,502
1990	938,452	59,869	2,941	1,001,262
2000 projected	1,230,000	310,000	6,000	1,546,000
% change, 1990-2000	+31.1%	+417.8%	+104.0%	+54.4%

Source Port Authority of New York and New Jersey;
Long Island Regional Planning Board

The volume of domestic air freight is also of interest. Domestic air freight flowing through New York's three regional markets increased from 610,055 short tons in 1985 to 896,119 short tons in 1990, a gain of 46.9%. Thus, the increase in domestic air freight was significantly greater than the increase in international air freight during the 1985-90 period. In 1990, Kennedy Airport accounted for almost 44% of the region's domestic air freight shipments, Newark for almost 49% of the total, and LaGuardia for the remaining 7%. The importance of Newark for domestic air shipments is not surprising given its location.

The Port Authority of New York and New Jersey projects that the volume of domestic air freight at Kennedy Airport could reach 530,000 short tons by the year 2000, a gain of 34.6% over the tonnage handled in 1990. The Long Island Regional Planning Board projects that Newark could handle as much as 680,000 short tons of domestic freight by the year 2000, a 56.1% increase over its 1990 volume, and that LaGuardia could handle as many as 107,000 short tons in the year 2000, a 57.7% increase over 1990. This would put total domestic air freight in the New York Region at 1,317,000 short tons in the year 2000. These projections suggest that Kennedy Airport would account for 40% of the total, Newark for 52% and LaGuardia for the remaining 8%. Thus, Newark's share of domestic regional air freight would increase slightly and Kennedy's share would decline slightly. (See Table 2-17).

The Growth of Foreign Markets, By Origin and Destination

The growth of foreign markets is of particular interest to Long Island because export markets can be an engine of future economic growth for the Long Island economy and because Calverton's east end location lends itself to trade with Europe.

1. THE GROWTH OF EXPORT MARKETS. This section analyzes the destination of air freight shipped to global markets through the New York Region's three major airports — Kennedy, LaGuardia, and Newark — during the 1980-88 period. Port Authority statistics indicate that the volume of air freight bound for international markets declined during the initial part of the 1980s and rebounded

TABLE 2-17
Projected Domestic Revenue Freight at New York's Regional
Airports, Year 2000
(In Short Tons)

Year	Kennedy	Newark	LaGuardia	Total
1980	456,592	105,749	35,257	597,598
1985	296,373	260,109	53,573	610,055
1986	287,564	276,046	49,769	613,379
1987	327,939	316,794	53,197	697,930
1988	359,489	418,005	52,667	830,161
1989	397,122	393,685	59,592	850,399
1990	392,730	435,538	67,851	896,119
2000 projected	530,000	680,000	107,000	1,317,000
% change, 1990-2000	+35.0%	+56.1%	+57.7%	+47.0%

Source: Port Authority of New York and New Jersey;
Long Island Regional Planning Board.

completely during the latter part of the decade. Therefore, the volume of air freight destined for foreign markets was virtually the same in 1988 as in 1980. However, the relative importance of given foreign markets changed dramatically during this period. In 1980, Asia accounted for 9% of all air freight exports from the region, Latin America for almost 13%, and Europe for 65% of the total. By 1988, Asia accounted for almost 28%, Latin America for less than 8%, and Europe for about 55%. These findings are summarized in Table 2-18.

Asian export markets are expected to continue to grow in importance. However, Europe is still America's largest export customer in terms of air freight. Moreover, Europe is likely to maintain that market share during the 1990s because the economic integration of Europe which is scheduled to occur in 1992 will make it an increasingly fertile market for U.S. exports.

2. THE GROWTH OF IMPORT MARKETS. The international geographic origins of air freight shipped to the New York Region are also of interest because a potential cargo facility at Calverton Airport could also function

TABLE 2-18
The Growth of Export Markets as Shown by The Destination of
Air Cargo from the New York Region, 1980-88
(Thousands of Short Tons)

Year	Total-All Partners	Percent Change	Asia	Percent Change	Japan	Percent Change	Latin America	Percent Change
1980	415	-1.6	39	-7.1	21	-4.6	52	+4.0
1981	364	-12.3	43	+10.3	22	+4.8	47	-9.6
1982	320	-12.1	44	+2.3	22	0.0	36	-23.4
1983	300	-6.3	49	+11.4	22	0.0	28	-22.2
1984	360	+20.2	63	+28.6	26	+18.2	33	+17.9
1985	288	-20.2	57	-9.5	24	-7.7	27	-18.2
1986	304	+5.8	68	+19.3	29	+20.8	30	+11.1
1987	345	+13.4	91	+33.8	47	+62.1	32	+6.7
1988	414	+20.1	114	+25.3	57	+21.3	32	0.0
1980-88	-1	-0.2	+75	+192.3	+36	+171.4	-20	-38.5

Year	Europe	Percent Change	United Kingdom	Percent Change	France	Percent Change
1980	271	+1.1	56	0.0	40	+11.1
1981	219	-19.2	45	-19.6	33	-17.5
1982	184	-16.0	36	-20.0	29	-12.1
1983	170	-7.6	36	0.0	24	-17.2
1984	209	+22.9	48	+33.3	28	+16.7
1985	163	-22.0	37	-22.9	22	-21.4
1986	169	+3.7	39	+5.4	21	-4.6
1987	188	+11.2	45	+15.4	25	+19.0
1988	227	+20.7	54	+20.0	32	+28.0
1980-88	-44	-16.2	-2	-3.6	-8	-20.0

Source: Port Authority of New York and New Jersey, prepared by the WEFA Group.

as a gateway for such imports, particularly from Europe. Imports through the three regional airports increased from 297,000 short tons in 1980 to 584,000 short tons in 1988. Thus, air freight imports into the region virtually doubled during this period. Imports from Asia grew most rapidly between 1980 and 1988. They increased from 92,000 short tons in 1980 to 208,000 short tons in 1988. In 1980, Asia accounted for 31% of total air freight entering the New York Region, Europe for almost 57%, and Latin America for about 10%. By 1988, Asia accounted for almost 36% of the total volume of air

freight imports, Europe for almost 52%, and Latin America for about 9%. (See Table 2-19). Thus, European countries remain important trading partners for both imports entering the New York Region and exports leaving the New York Region by air.

TABLE 2-19
The Global Geographic Origins of Air Cargo
Entering the New York Region, 1980-88
(Thousands of Short Tons)

Year	Total-All Partners	Percent Change	Asia	Percent Change	Japan	Percent Change	Hong Kong	Percent Change
1980	297	-8.2	92	+2.2	24	+14.3	26	-3.7
1981	354	+19.3	109	+18.5	28	+16.7	28	+7.7
1982	363	+2.4	111	+1.8	28	0.0	28	0.0
1983	476	+31.3	162	+45.9	37	+32.1	43	+53.6
1984	656	+37.7	216	+33.3	52	+40.5	54	+25.6
1985	638	-2.8	212	-1.8	53	+1.9	47	-13.0
1986	556	-12.8	216	+1.9	36	-32.1	46	-2.1
1987	576	+3.5	226	+4.6	33	-8.3	41	-10.9
1988	584	+1.4	208	-8.0	34	+3.0	35	-14.6
1980-88	+287	+96.6	+116	+126.1	+10	+41.7	+9	+34.6

Year	Europe	Percent Change	West Germany	Percent Change	Italy	Percent Change	Latin America	Percent Change
1980	168	-13.8	43	+2.4	28	-31.7	30	-3.2
1981	194	+15.5	43	0.0	37	+32.1	42	+40.0
1982	207	+6.7	41	-4.6	42	+13.5	35	-16.7
1983	256	+23.7	50	+22.0	51	+21.4	47	+34.3
1984	358	+39.8	71	+42.0	69	+35.3	66	+40.4
1985	351	-2.0	72	+1.4	66	-4.4	56	-15.2
1986	275	-21.6	50	-30.6	56	-15.2	48	-14.3
1987	280	+1.8	48	-4.0	49	-12.5	52	+8.3
1988	303	+8.2	53	+10.4	51	+4.1	53	+1.9
1980-88	+135	+80.4	+10	+23.3	+23	+82.1	+23	+76.7

Source: Port Authority of New York and New Jersey, prepared by the WEFA Group.

The Potential Sources of Air Freight Exports

A key question is the extent to which a potential cargo facility at Calverton Airport would attract air freight shipments destined for foreign markets that would otherwise go to the other regional airports, particularly Kennedy Airport. In order to answer this question, the following steps were taken:

1. The region's dominant air export commodities were identified.
2. The manufacturing base of Calverton's potential catchment area, including Long Island, parts of the New York Metropolitan Region and southwestern New England were analyzed to determine the extent to which industries that produce these commodities are represented.
3. Long Island manufacturing firms actively involved in international trade were interviewed to determine their potential need for and use of a cargo facility at Calverton Airport.

The remainder of Part Three presents the results of this analysis.

1. THE REGION'S DOMINANT AIR EXPORT COMMODITIES. Eleven commodities stand out as dominant. They include plastics, pharmaceuticals, printed matter, office and other types of non-electrical machinery, internal combustion engines, electric motors and generators, telecommunications apparatus and other electrical machinery, aircraft and parts, and scientific instruments. Office machinery was preeminent both in terms of tonnage flown and dollar value. In 1990, almost 35,000 long tons of office machinery valued at more than \$4.7 billion was exported through New York's three regional airports.

The region's dominant air export commodities, by tonnage and dollar value are summarized in Table 2-20.

2. THE MANUFACTURING BASE OF CALVERTON'S CATCHMENT AREA. The next step was to determine to what extent Calverton's potential catchment area specializes in employers that produce the foregoing commodities. The analysis began with Long Island's economic base

TABLE 2-20
Dominant Air Exports Through the New York Region, 1990
by Tonnage and Dollar Value

<i>Commodity</i>	<i>Tonnage*</i>	<i>Dollar Value</i>
Plastic Materials	10,903.6	\$153,144,965
Pharmaceuticals	8,823.5	1,194,365,461
Printed Matter	15,262.8	545,999,028
Office Machinery	34,963.5	4,736,055,663
Non-Electrical Machinery, Not Elsewhere Classified	27,691.3	1,440,768,072
Internal Combustion Engines	6,527.6	3,341,897,868
Electric Motors and Generators	15,524.7	1,178,390,145
Telecommunications Apparatus	10,549.0	1,461,043,514
Scientific Instruments	16,371.4	2,136,858,928
Electrical Machinery, Not Elsewhere Classified	14,724.6	3,004,045,380
Aircraft and Parts	10,018.5	2,694,726,832
Total	171,360.5	21,887,295,856
Total-All Commodities	398,753.5	36,473,209,103
Dominant Commodities/ All Commodities	43%	60%

*Tonnage is expressed in long tons

Source: Port Authority of New York and New Jersey

since Long Island employers have the closest proximity to a potential cargo facility at Calverton.

Long Island is characterized by a high concentration of firms that produce the commodities identified in Table 2-20. According to County Business Patterns, Long Island contained 4,784 manufacturing establishments employing 175,537 persons in 1989. Of these, 1,578 establishments employing 99,553 persons manufactured the commodities shown in Table 2-22. Thus, one-third of Long Island's manufacturing establishments, which collectively employed almost 57% of all bi-county manufacturing workers, produced products that accounted for the preponderance of air exports from the New York Region in 1990. This was the highest single concentra-

tion of such production within the New York Region. In New York City, 1,872 manufacturing establishments employing 97,513 workers were engaged in producing these commodities. This was equivalent to 14% of the city's manufacturing establishments and 25% of the city's manufacturing employment. In the northern suburbs, Westchester, Rockland, Orange, Putnam, Dutchess and Ulster, 657 manufacturing establishments employing 65,831 persons were engaged in manufacturing the critical commodities identified in Table 2-22. This was equivalent to 28% of all manufacturing establishments and 55% of all manufacturing jobs in these counties. These establishments, in turn, accounted for 55% of total manufacturing employment in these counties.

These statistics suggest that a significant proportion of the critical commodities identified in Table 2-22 may well have originated on Long Island given Long Island's extensive specialization in these products. The foregoing findings are summarized in Table 2-23.

Exports originating in southwestern New England could also conceivably be channeled across existing bridges to a cargo facility at Calverton. For purposes of analysis, southwestern New England has been defined to include the states of Connecticut and Rhode Island and the two southwestern Massachusetts counties of Berkshire and Hampden. Berkshire County encompasses the city of Pittsfield, Massachusetts. Hampden County encompasses the city of Springfield.

This area of New England also contains a substantial number of jobs in those industries that have been identified as critical export industries for the New York Region. For the southwestern New England region as a whole, more than 41% of all manufacturing jobs were in these industries in 1989. In Connecticut, almost half of all manufacturing jobs were in these critical industries. These results are summarized in Table 2-24.

3. INTERVIEW RESULTS: LONG ISLAND EMPLOYERS. Telephone and in-person interviews were conducted with a

TABLE 2-21
Concentration of the Manufacturing Base in Critical Export Commodities, 1989
Nassau-Suffolk, New York City, Northern Suburbs

SIC Code	Commodity	____Nassau-Suffolk____		____New York City____		____Northern Suburbs____	
		Employment	Estab.	Employment	Estab.	Employment	Estab.
282	Plastic Materials	350	4	0	0	0	0
2834	Pharmaceutical Preparations	3,758	41	1,535	7	3,804	11
271,272,273,274	Printed Matter	11,738	259	65,398	1,020	9,381	166
357	Office Machinery	684	17	1,378	25	7,680	15
35(ex.357)	Other Non-Electrical Machinery	11,599	593	8,915	443	13,682	224
3621	Electric Motors & Generators	550	6	0	0	0	0
366	Telecommunications Apparatus	5,898	56	483	17	725	13
36(ex.3621,366)	Other Electrical Machinery	20,593	342	13,155	255	24,407	138
372	Aircraft and Parts	19,128	54	1,115	15	175	4
381,382,384	Scientific Instruments	25,255	206	5,534	90	5,977	86
Total-Critical Commodities		99,553	1,578	97,513	1,872	65,831	657
Total Manufacturing		175,537	4,784	391,083	13,158	120,314	2,360
Critical Commodities/Total Manufacturing		56.7%	33.0%	24.9%	14.2%	54.7%	27.8%

Source: Long Island Regional Planning Board based on County Business Patterns data

sample of 300 Long Island firms during May, 1992 and June, 1992. The firms were selected from a list provided by the Long Island Association of Commerce and Industry. The list contained a significant number of firms that were engaged in export/import trade.

Respondents were asked about their product or service, whether they engaged in international trade and to what extent they shipped goods by air. They were asked to identify their foreign markets. They were also asked if they would use an air cargo facility at Calverton, if such a facility would be useful to their business and what facilities, if any, they would need within the airport perimeter.

Complete responses were obtained from 119 firms, which is equivalent to a response rate of almost 40%. The respondents included manufacturers of computer software, air-

craft components, eyeglass frames, marine products, business machines, plastics, cosmetics, writing materials, fasteners, consumer electronics, portable telephones, medical equipment, aerosol products and men's clothing. Of the 119 respondents, 77 or 65% of the total were involved in exporting and/or importing. We focused on these firms in evaluating the potential for generating cargo for possible cargo operations at Calverton Airport because the location of the airport lends itself to international trade.

Of the 77 firms, 46 imported goods from foreign countries, 59 exported goods to foreign countries and 28 were both exporters and importers. Approximately 81% of the firms engaged in export trade shipped some or all of their goods by air. Approximately 65% of the firms engaged in importing also used air freight.

TABLE 2-22
Concentration of the Manufacturing Base in Critical Export Commodities, 1989
Southwestern New England

<i>SIC</i> <i>Code</i>	<i>Commodity</i>	<i>Connecticut</i>		<i>Rhode Island</i>		<i>Bershire & Hampden Counties, MA</i>		<i>Regional Total</i>	
		<i>Employment</i>	<i>Estab.</i>	<i>Employment</i>	<i>Estab.</i>	<i>Employment</i>	<i>Estab.</i>	<i>Employment</i>	<i>Estab.</i>
282	Plastic Materials	1,552	15	175	2	143	3	1,870	20
2834	Pharmaceutical Preparations	5,053	15	60	3	175	2	5,288	20
271,272,273,274	Printed Matter	14,929	308	3,111	52	3,139	49	21,179	409
357	Office Machinery	10,526	54	346	7	1,750	6	12,622	67
35(ex.357)	Other Non-Electrical Machinery	39,095	1,266	5,775	273	6,310	244	51,180	1,783
3621	Electric Motors & Generators	2,212	13	10	1	0	0	2,222	14
366	Telecommunications Apparatus	4,043	42	750	7	175	5	4,968	54
36(ex.3621,366)	Other Electrical Machinery	26,764	393	5,278	58	3,087	34	35,129	485
372	Aircraft and Parts	54,821	127	60	2	310	9	55,191	138
381,382,384	Scientific Instruments	24,331	239	7,335	53	4,095	10	35,761	302
Total-Critical Commodities		183,326	2,472	22,900	458	19,184	362	225,410	3,292
Total Manufacturing		373,419	6,545	110,759	2,719	59,853	1,064	544,031	10,328
Critical Commodities/Total Manufacturing		49.1%	37.8%	20.7%	16.8%	32.1%	34.0%	41.4%	31.9%

Source: Long Island Regional Planning Board based on County Business Patterns data

TABLE 2-23
Air Carriers Used by Long Island Exporters/Importers
(Percent of Firms)

<i>Air Carrier</i>	<i>Exporters</i>	<i>Importers</i>
Integrated Carriers	19%	13%
Freight Forwarders/Custom's Brokers	42	43
Major International Airlines	25	13
Prerouted by Customer Choice	8	17
No Response to Question	6	14
Total	100	100

Source: LIRPB employer survey

TABLE 2-24
The Export/Import Markets of Long Island Firms*
(Percent of Firms)

<i>Market</i>	<i>Exporters</i>	<i>Importers</i>
Europe	73%	60%
Far East	40	30
South America	8	7
Canada	6	3
Middle East	18	7
Other	19	30

*Note: Percentages do not add to 100 because many exporters and importers dealt with several markets.

Source: LIRPB employer survey

A. **CARRIER USED.** In order to assess whether cargo operations at Calverton would be viable, it is necessary to understand how Long Island firms route their cargo to various airlines. Among the exporters, nine firms used the services of integrated carriers such as Federal Express, U.P.S., DHL or Airborne Express, four firms dealt directly with major international airlines and twelve firms said that their goods were pre-routed by their customers and that they used the freight forwarder or airline chosen by their customers. Twenty firms, 42% of the total, used freight forwarders.

Among Long Island Importers that used air freight, 13% used integrated carriers, 13% said that their goods were prerouted by their customers and 17% dealt directly with the major international airlines. Once again, about 43% of the importers used freight forwarders and custom's brokers. This underscores the important role that freight forwarders/consolidators and custom's brokers, the people who move cargo through customs, are likely to play in any cargo facility at Calverton Airport. If these middle men fail to locate at a cargo facility, the success of that facility would be questionable.

B. **EXPORT/IMPORT MARKETS.** Of the Long Island firms that exported goods by air, 73% shipped goods to Europe, 40% shipped to the Far East, 8% shipped to South America, 6% shipped to Canada, and 19% shipped to the Middle East. There were miscellaneous other destinations including Iceland, Australia and New Zealand. Many of the firms interviewed exported goods to several foreign markets.

Of those Long Island firms that imported goods by air, 60% imported goods from Europe, 30% from the Far East, 7% from South America, 7% from the Middle East and 3% from Canada. Once again, many firms imported goods from several foreign markets.

The findings underscore the importance of the European market for Long Island importers and exporters.

C. **GOODS EXPORTED/IMPORTED.** Among the firms that exported their goods by air, 19% shipped high-technology equipment or medical materials, 17% shipped electronic components and 17% shipped machinery. Computers and computer components and telecommunications equipment were also frequently mentioned. Among firms that imported goods by air, 17% imported electronic components, 17% imported various retail merchandise, 13% imported machinery, 10% imported computers and computer components, and 10% imported high-technology equipment or medical materials.

TABLE 2-25
Goods Exported/Imported by Long Island Firms
(Percent of Firms)

<i>Type of Good</i>	<i>Exporters</i>	<i>Importers</i>
High-Technology Equip/Medical Materials	19%	10%
Electronic Components	17	17
Machinery	17	13
Miscellaneous Retail	6	17
Art Design/Displays	4	7
Computers/Components	8	10
Clothing/Textiles/Fabrics	2	3
Telecommunications Equipment	4	3
Auto Parts	2	3
Plastics	2	7
Building/Construction/Packing Materials	4	3
Printed Materials	2	3
Other	13	4
Total	100	100

Source: LIAPB employer survey

Conclusions:

The Potential For Generating Air Cargo for Calverton Airport

One source of cargo for a potential air cargo facility at Calverton is existing and potential air cargo traffic at Kennedy International Airport. Calverton could conceivably siphon some air cargo activity from Kennedy. Calverton's location makes it a particularly good candidate for air cargo to and from Europe. Therefore, some of Kennedy's cargo currently going to or coming from Europe could conceivably use potential cargo facilities at Calverton.

In 1990, Kennedy Airport accommodated more than 1.3 million short tons of revenue freight. Port Authority projections suggest that Kennedy could be asked to accommodate almost 1.8 million short tons of revenue freight by the year 2000. Moreover, the volume of international air freight handled by Kennedy is expected to rise to 1.23 million short tons by the year 2000, a 31% increase over Kennedy's 1990 volume of international freight. Much of Kennedy's international business involves flights to and from Europe. Europe is likely to remain a significant market for U.S. importers and exporters. Planned economic integration within the European Community will result in an expanded European market.

International cargo siphoned from Kennedy Airport is one potential source of cargo for Calverton Airport. Moreover, the manufacturing base of Calverton's potential catch-

ment area, which includes Long Island, parts of the New York Metropolitan Region and southwestern New England, generates the types of commodities that are currently shipped by air through the New York Metropolitan Region. These commodities include plastics, pharmaceuticals, printed matter, office machinery, telecommunications apparatus, aircraft and parts and scientific instruments. Many of the region's employers producing these commodities are actually located on Long Island. Currently, one-third of Long Island's manufacturing establishments which account for almost 57% of Long Island's manufacturing jobs produce one or more of the foregoing commodities.

In order to confirm these statistical findings, interviews were conducted with a sample of Long Island manufacturers. We focused on those firms involved in exporting and/or importing. Most of these firms used air freight for their operations. Their predominant market was Europe. They specialized in electronic components, machinery, computers and computer components and telecommunications equipment.

The findings suggest that there is sufficient air cargo potential for at least a modest air cargo operation at Calverton Airport. Since most regional firms use custom's brokers and/or freight forwarders in shipping their cargo by air, the viability of a potential cargo facility at Calverton will depend in large measure on the ability to attract such brokers and forwarders. This issue is discussed in Part Four.

PART FOUR

A Survey of Air Freight Providers

This part presents the results of the Regional Planning Board's survey of air freight providers. The survey attempted to ascertain their interest in utilizing potential air cargo facilities at Calverton Airport. The providers interviewed included freight forwarders and customs brokers, integrated carriers and major airlines that have all cargo operations. Since many of these providers mentioned that the relative costs of operating at given airports were a primary consideration in their locational decisions, an analysis of operating costs at airports in or near the New York Metropolitan Region was also made.

Freight Forwarders/Customs Brokers

These intermediaries assemble multiple shipments bound for the same destination and consolidate them into one shipment for transit via ship or airline. A freight forwarder determines the most cost-effective and timely means of getting cargo from their customers to an airport that has an impending flight to the appropriate destination. At the destination, the forwarder provides break-bulk services and distributes the individual packages for delivery.

Freight forwarders who work for the *International Air Traffic Association (IATA)* work on a 5% commission. For example, if an airline charges a forwarder \$1.00 per kilo of cargo, the forwarder charges its customer \$1.05 per kilo. Freight forwarders make most of their money from consolidating cargo. They pack shipments from different customers that are going to the same destination in empty cargo containers provided by the airlines. This saves the airlines space. It also saves them time by eliminating the need to keep track of many small packages. Airlines often allocate space to freight forwarders. In fact, some airlines call daily to find out whether the forwarder wants its palette held that day. Reserved space is particularly important during busy seasons. Freight forwarders work closely with customs brokers over-

seas to ensure that a package is properly paid for and expedited.

A customs broker acts on behalf of a client in clearing shipments through customs. Most freight forwarders are also customs brokers who are licensed by the Treasury Department. Almost all importers rely on customs brokers to clear their shipments through customs. Customs brokers prepare customs entries, declare the value of shipments, determine the appropriate classifications or tariff rates, and file the necessary documents in compliance with customs regulations. Some customs brokers prepay all duties and taxes and then bill the importer.

Fifteen freight forwarders/customs brokers with facilities at Kennedy and/or Newark Airports were verbally interviewed for this study. All of the freight forwarders were also licensed customs brokers. They were asked what facilities they had at these airports, whether congestion was a problem, what factors affected their decision to locate at given airports, whether they thought the region needed an additional cargo facility, and whether they would use a cargo facility at Calverton.

Six of the fifteen said that they currently experience significant operational delays at Kennedy Airport. Eight of the fifteen saw a definite or a possible need for an additional air cargo facility in the New York Region. However, the remaining seven, all of whom were small or medium-sized firms, said they would not use cargo facilities at Calverton because they did not have the market share or capacity to serve another airport and they feared losing business if they spread themselves too thin. However, even some of these firms were willing to consider locating some portion of their operations at Calverton. In all, ten of the fifteen companies surveyed said that they might consider moving some facilities to Calverton.

Among the freight forwarders interviewed, volume of freight, availability of flights, and cost of doing business were the most frequently mentioned determinants governing a firm's decision to locate at given airports. Freight forwarders will apparently use an airport if they can gain access to scheduled flights at reasonable cost. All fifteen companies said that they would need a U.S. customs facility at Calverton in order to operate there. While most customs clearance activity takes place by computer, some customs agents must be located at Calverton to perform spot checks.

The following interview with Mr. Michael Tomasulo of Air Compaq International, a medium-sized freight forwarder, captures the general attitude of the freight forwarders with whom we spoke: Mr. Tomasulo said that Calverton's success as a cargo airport would depend most heavily on the relative cost of aircraft operations there. He referred specifically to landing fees at Calverton vis-a-vis those of other airports in the region. He noted that it was extremely expensive to land an aircraft at Kennedy Airport both because of congestion and because of relatively high union-scale wages. He suggested that if landing costs at Calverton were significantly lower than at Kennedy — low enough to justify trucking cargo from Kennedy to Calverton — a Calverton operation specializing in flights to Europe could become feasible. Mr. Tomasulo thought it unlikely that the freight forwarders themselves would move to Calverton in the foreseeable future because their business is concentrated at Kennedy Airport and because many administrative functions must take place at headquarters. In the longer run, however, he thought it likely that some consolidation and clearance activity might eventually migrate to Calverton. Mr. Tomasulo noted that freight forwarders are already moving farther from Kennedy Airport in search of lower real estate costs. With the implementation of a computerized Automatic Billing System by the U.S. Customs Service and the growing use of FAX machines, freight forwarders have much greater locational flexibility and no longer have to locate at or adjacent to regional airports. They could therefore be attracted by the relatively low real estate costs that characterize the Calverton/Riverhead

area. Mr. Tomasulo felt that Calverton would be a particularly good location for time sensitive cargo that could deteriorate as a result of operational delays at Kennedy Airport. Time sensitive cargo includes food, pharmaceuticals and other perishables.

The survey results for the freight forwarders/customs brokers are summarized in Table 2-26.

TABLE 2-26
Survey Results - Freight Forwarders/Customs Brokers

<i>Firm Name</i>	<i>Experiencing Delays at JFK</i>	<i>Major Locational Consideration(s)</i>
Aeronautics Express, Inc.	No	None Given
Airstream Brokerage Corp.	No	None Given
Alba Forwarding Co., Inc.	Yes	Existence of U.S. Customs Facilities
Airport Clearance Service, Inc.	Yes	Proximity to Customers
Alison Transport, Inc.	Yes	Proximity to Customers; Availability of Warehouse and Customs Facilities
All Flags Forwarding	No	Availability of Flights
All Air Brokers	No	An Adequate Volume of Freight
All Freight International Cargo, Inc.	No	The Needs of Overseas Associates
Airmac Shipping Co., Inc.	No	An Adequate Volume of Freight
Alomar Transport, Inc.	No	An Adequate Volume of Freight; Availability of Warehouse Facilities
Alpha International	Yes	An Adequate Volume of Freight; Availability of Flights
Air Tiger Express Corp.	No	An Adequate Volume of Freight; Availability of Flights, Relative Costs
Efficiency Systems	Yes	Availability of Flights, Relative Costs
Air Compaq International	Yes	An Adequate Volume of Freight; Relative Costs
Aero Marine Expeditors, Inc.	No	An Adequate Volume of Freight

Source: LIRPB Air Freight Provider Survey

Integrated Carriers/Major Airlines

Integrated carriers, which assemble cargo, fly it to its destination on their own planes, and distribute it, are the most rapidly growing segment of the air cargo industry. If at least one integrated carrier were to open a facility at Calverton Airport, at least a modest level of cargo operations

would be possible. Because of the importance of the integrated carriers to any potential cargo operation at Calverton, LIRPB staff interviewed representatives of each of the major carriers. These carriers and their representatives are listed in Table 2-27. The staff also interviewed Lufthansa Airlines, a major airline with a significant number of all-cargo flights, and the U.S. Postal Service, which is itself a major user of air freight.

TABLE 2-27
Integrated Carriers and Major Airlines Surveyed

<i>Carrier</i>	<i>Representative</i>
Airborne Express	Mr. George Heino
Federal Express	Mr. Randall Holt
United Parcel Service	Mr. Michael McAlpin
DHL	Mr. Tony Bosco
Emery Airlines	Mr. Hank Bartof
Burlington Airlines	Mr. Thomas Slabowski
U.S. Postal Service	Mr. Winston Dally, Mr. Gary Thuro, Mr. Michael Farrell
Lufthansa Airlines	Mr. Manfred Bierswale

Based on these interviews, the following facts became apparent: the two major locational determinants for the integrated carriers are the volume of cargo in the surrounding region and the cost of operating at given airports. For integrated, overnight carriers like Federal Express, DHL and the U.S. Postal Service, timeliness and their competitive position for customers are the driving force behind decisions involving location. While some carriers were skeptical of the ability of an airport to attract enough cargo business without offering passenger flights, others mentioned that shipping cargo on passenger flights is a very uncertain affair.

Because the integrated carriers do not rely to any great extent on freight forwarders for cargo, they make particularly good candidates to become tenants at new satellite airports. Large integrated carriers like Airborne Express currently have a sufficient share of the Long Island market to be able to dedicate entire vehicles to a Long Island airport without splitting up trucks. Integrated carriers such as DHL and Federal Express, each of which has a large residential

customer base on Long Island, are particularly good candidates to locate at Calverton. DHL expressed a strong interest in a new facility at Calverton.

The interviews made it clear that large air cargo carriers at Kennedy, such as Lufthansa, are facing huge increases in the rental cost of cargo space when their leases come up for renewal in the mid-1990s. They, too, might consider shifting some of their operations to Calverton because of these increases.

Excerpts of the individual interviews follow:

1. AIRBORNE EXPRESS. Mr. Heino explained that Airborne would definitely consider using flights going in and out of Calverton if they met the scheduling needs of the Company. Airborne would also land flights at Calverton if the landing costs were sufficiently low. Mr. Heino emphasized that for the big carriers like Airborne, the amount of freight on Long Island itself was not the main issue, although it is not insignificant. Many of Airborne's exports originate in various parts of the United States and are directed to where there is available space and to where the costs are lowest. He noted that many cargo providers prefer to avoid Kennedy during busy seasons because it is expensive and congested. He said he wouldn't hesitate to truck cargo to Calverton if the costs at Calverton were sufficiently low. However, during slow periods, when rates at Kennedy drop, Calverton could be pushed out of the market. While Mr. Heino thought that having passenger flights is usually important for an airport, he also said that air freight on passenger flights gets notoriously poor service, that the availability of passenger flights is irregular and that cargo is limited to packages that are less than 62 inches high.

2. FEDERAL EXPRESS. Mr. Randall Holt of Federal Express' Planning and Engineering Department in Memphis, Tennessee said the Company will be moving to facilities at Newark when its lease at Kennedy comes up for renewal in about seven years. They expect to be able to service all of their destinations from Newark. They are at Kennedy today because they took over a large Flying

Tiger facility at Kennedy when they merged with that firm. Mr. Holt said that if there were sufficient cargo volume on Long Island, Federal Express might land a small theater craft at Calverton. It would first conduct its own feasibility study of landing fees and rental costs at Calverton. Mr. Holt said that in order to operate out of Calverton, Federal Express would need runways of at least 3,500 feet, tie-down rental space, accessibility to jet fuel, and a well-functioning weather reporting system at Calverton.

During the early 1980s, Federal Express landed a cargo plane weekly at Islip MacArthur Airport. It subsequently cancelled the operation in part because the runways were too short to allow them to land the type of aircraft they needed and in part because of time restrictions on when their flights could land. According to Mr. Al Werner, the Airport Manager at MacArthur, the carrier's inability to fill the plane to capacity was also a problem. Mr. Holt emphasized that integrated carriers are in a highly competitive business and that timeliness and competitive position vis-a-vis their customers is what governs their decision to locate at given airports.

3. UNITED PARCEL SERVICE. Mr. Michael McAlpin, an employee of U.P.S. air operations, explained that U.P.S. has a massive ground infrastructure with 265,000 employees and 125,000 vehicles. The company also operates 135 cargo jets. Its decisions to locate at given airports are influenced primarily by the location of its existing ground facilities. U.P.S. currently has large breakdown and sort centers in Melville and Farmingville. It uses air freight facilities at Kennedy and Newark Airports and in Philadelphia. Their use of Kennedy generally allows them to make all of their Long Island deliveries in a timely manner. Mr. McAlpin said that if Calverton had lower landing costs and allowed U.P.S. to land an appropriate-sized aircraft, the company would consider using it for Long Island deliveries. However, he indicated that Long Island would have to generate a larger volume of freight before U.P.S. would divert resources from Kennedy to Calverton Airports.

4. DHL. Mr. Tony Bosco, who is a cluster manager for DHL, said that the carrier has been expanding its share of the Long Island residential market and would welcome the opportunity to move freight in and out of Suffolk County more efficiently. Currently, DHL trucks distribute freight from Kennedy to Suffolk. Mr. Bosco said that the overnight delivery industry is highly competitive and that it is not service efficient to continue to do this. Mr. Bosco said that a cargo facility in Suffolk would be highly advantageous for serving its Suffolk customers in a timely manner. Mr. Bosco reiterated that it is extremely costly to land flights at Kennedy and at other large airports and that a satellite airport at Calverton would probably result in a large cost savings for the carrier. Mr. Bosco explained that DHL, like other integrated carriers, is essentially self-sufficient at airports and needs very few fixed-base airport services. He suggested that those freight forwarders who want to continue doing business with DHL will follow them to any airport from which they choose to operate. If not, other freight forwarders will take their place. Mr. Bosco explained that DHL has not started an operation at Stewart Airport because Long Island has been a much more significant growth area for the company. They are therefore seeking opportunities on Long Island to better serve their Long Island customers.

5. EMERY AIRLINES. Mr. Frank Bartof noted that Emery had recently started operations out of Stewart Airport to be close to its largest customer, the IBM Corporation. Emery currently lands one cargo aircraft per day at Stewart. Whereas Federal Express and DHL emphasize residential customers and have therefore expanded their share of the Long Island market, Emery does not cater to the residential market. Therefore, Emery is not a prime candidate for potential cargo operations at Calverton Airport.

6. BURLINGTON AIRLINES. Mr. Thomas Slabowski, terminal manager for Burlington, has an office in Farmingdale. He shares a DC-8 cargo plane flying in and out of Kennedy Airport with other Burlington branch offices. He

would like to make the Long Island station independent of Kennedy Airport because of congestion and delays at Kennedy. He noted that his Long Island customers sometimes must wait an extra day for delivery because of problems at Kennedy. He stressed that pleasing and keeping his Long Island customer base, including the Grumman Corporation, is his biggest concern. Currently, the Long Island station doesn't have sufficient cargo to fill an entire DC-9. However, he thinks this will change and is therefore optimistic about using a potential Calverton cargo facility sometime in the future.

7. U.S. POSTAL SERVICE. Messrs. Dally, Thuro and Farrell work at the Postal Service's Regional Planning Center in Windsor, Connecticut. They indicated that the major locational consideration for the Postal Service is timely service and not cost. The Postal Service owns 727 cargo planes which are currently operated by an outside contractor, Evergreen Airlines. It also uses other airlines and airports that specifically meet their service needs. For example, the Postal Service currently uses Islip-MacArthur Airport on a limited basis. They do not have employees there but periodically truck cargo to MacArthur and use American Airlines for transport. The Postal Service does have a large number of employees at both LaGuardia and Kennedy Airports. The Postal Service negotiates two types of contracts with carriers. Under a National Systems Contract, they pay the carrier an agreed upon rate per pound. Under a Regional Systems Contract, used by carriers that fly to special regions and serve smaller markets, the price per pound is generally somewhat higher. The Albany and Binghamton, New York areas are examples of smaller regional markets.

The Postal Service is highly flexible and can use lift capacity at almost any airport. The postal service representatives said that since cost is somewhat of a factor, they would prefer to truck mail a shorter distance from Suffolk to Calverton than from Suffolk to Kennedy. However, in order for Calverton to be a feasible alternative, it would either have to offer a multitude of scheduled

flights or offer flights to out-of-the-way markets. Express mail flights probably couldn't use Calverton because they must land near a large processing facility.

8. LUFTHANSA AIRLINES. Mr. Manfred Bierswale said that Lufthansa primarily handled containerized cargo and that 60% of it was shipped on all cargo planes. Lufthansa has one all cargo international flight daily, six days a week. It breaks down the cargo in its own facility and the cargo is spot checked by the U.S. Customs Service. Mr. Bierswale said that Lufthansa's primary locational consideration is the relative cost of operating at given airports. Mr. Bierswale is concerned that his costs of operation at Kennedy are becoming uneconomical. In 1990, the Port Authority will take control of the cargo facility that Lufthansa built at Kennedy and the airline expects that its cost to rent the facility will increase by 1,000%. Having built the facility, Lufthansa was leasing it from the Port Authority for a very low rental fee. The conversation with Mr. Bierswale seemed to suggest that major international airlines that operate all cargo flights could move some or all of their facilities away from Kennedy Airport in the wake of sharply rising rental costs for cargo space.

The foregoing interviews suggest that those integrated carriers which recently expanded their share of Long Island's residential market, notably DHL, would be most likely to use cargo facilities at Calverton Airport. However, large international airlines that have all cargo flights might also be good candidates because of steeply rising rental costs at Kennedy.

Members of the Economic Advisory Committee to the Calverton Airport study questioned the veracity of these interviews and criticized the fact the written questionnaires were not sent to senior personnel or decision-makers.

In response to this criticism, a covering letter and questionnaire was mailed to the President or Chief Executive Officer of fifty-five air freight providers. The questionnaire sought to ascertain their interest in utilizing potential air cargo facilities at Calverton Airport. See Appendix E.

We received twenty-six written replies, a response rate of 47%. The air freight providers that responded and the name and title of their representative are listed below:

<i>Air Freight Provider</i>	<i>Representative</i>	<i>Title</i>
Aerolineas Argentinas	Juan A. Martinez	Cargo Manager
Aeromexico Cargo	Douglas E. MacArthur	President
Airborne Express	Steve Eller	Regional Field Services Manager
Air Canada	Dave Taylor	Senior Director, Cargo
Air China International Corp.	Wu Kewang	Deputy General Manager - U.S.A.
Air France	Camille Allaz	Director General
Air Jamaica, Ltd.	Robert Armento	Manager, Cargo Sales & Service
America West Airlines	John Zembeck	Senior Director, Cargo Sales & Service
American Airlines	James J. Caruso	Division Manager, Cargo Sales NY/NE
American Trans Air	R.A. Ward, Sr.	Director, Cargo Sales & Service
Avianca Airlines	Mauricio Rubio	Marketing Manager, USA
British Airways	John F. Veracruz	Director of Cargo, Northeast USA
BWIA	Tim D. Cook	Senior V.P. - North America
Delta Airlines, Inc.	Harris Morris	Vice President, Properties
Fast Air Carrier, S.A.	Cedric J. Newnes	Cargo Sales Manager
Federal Express	Donald J. Taddia	Senior Manager, Airport Relations & Development
Iberia Airlines of Spain	Walter G. Colon	Cargo Sales Manager, USA/Canada
KLM Cargo	Andrew G. Morch	Manager, Network Services, The Americas
Korean Air	David A. Locue	Deputy General Manager, Cargo Marketing, The Americas
Lufthansa German Airlines	Joachim Haas	Vice President Cargo, USA
North Star Airlines	Gregory Himoff	President
Northwest Airlines	David Behrends	Vice President - Cargo
Nippon Cargo Airlines Co., Ltd.	Peter M. Diefenbach	Manager, Marketing
Olympic Airways	Edward G. Cassidy	Cargo Sales Manager, U.S.
Quantas Airways	Bruce McCaffrey	Vice President Freight, The Americas
United Parcel Service Co.	Ron Kraemer	Long Range Planning, Buildings and Facilities

Question 1 asked if the firm would consider using air cargo facilities at Calverton Airport. Question 2 asked what circumstances would induce the firm to use air cargo facilities at Calverton Airport.

The actual answers are as follows:

1. AEROLINEAS ARGENTINAS. No. We only have passenger flights that arrive at JFK.

2. AEROMEXICO CARGO. No. While we do operate freighter aircraft, a split of our operations just to handle freighter aircraft would not be cost effective. If the majority of the forwarder/consolidator community presently based at JFK were to move their Long Island terminal functions to Calverton and the combination of traffic yields from Calverton were sufficiently higher than at JFK and the aircraft operating costs were sufficiently lower to offset the added cost of a split cargo terminal operation (we would consider using Calver-

- ton). The airline costs for the terminal operations would include facility costs, manpower costs, and dual communication costs. The aircraft operating costs would include landing fees, fuel costs, ramp charges, loading and unloading charges. An additional consideration is the logistics costs of moving pallets and containers between the two facilities as well as the cost impact of trucking the additional mileage to Calverton.
3. AIRBORNE EXPRESS. Maybe. We might use Calverton only for the very eastern end of Long Island. To feed any of our Long Island terminals west of this Airport wouldn't work well, due to the heavy traffic volume. We might use Calverton if Islip were one end point on a DC-9 Route where their volume along with another intermediate stop would make this feasible.
 4. AIR CANADA. No. We need to be located in close proximity to aircraft at Kennedy and LaGuardia and close to major international freight forwarders. We might use Calverton if it had a major cost advantage. However, it is doubtful that this would be enough to offset location.
 5. AIR CHINA INTERNATIONAL CORPORATION. No. Calverton would not comply with our international aviation agreement. It is not convenient to use two different airports.
 6. AIR FRANCE. We will have to study the operation economy (of Calverton) for our airline. In the New York area we operate at both JFK and Newark airports, and have cargo building facilities in JFK for our cargo flights. Due to the fact that all our passenger fleet will keep serving the same airports, we don't think that the opening of a new base in this area can be anticipated in the near future. Despite this feeling, we should like to get any information concerning your study conclusions.
 7. AIR JAMAICA, LTD.. No. 90% of our freight originates and terminates in Brooklyn and in the New York City area. Also, we use passenger aircraft to move freight.
 8. AMERICA WEST AIRLINES. No. We operate no freighter aircraft.
 9. AMERICAN AIRLINES. No. American Airlines presently operates passenger flights from Islip-MacArthur Airport, Kennedy, and LaGuardia. American does not operate all-cargo aircraft and therefore would not be able to utilize Calverton's planned cargo facility.
 10. American Trans Air. No. ATA has a limited New York flight schedule operating from JFK only.
 11. Avianca Airlines. No. Avianca operates to JFK International Airport as a gateway for both passengers and cargo. To move such an operation will not be feasible due to the importance of international connections out of JFK.
 12. BRITISH AIRWAYS. No. It is 70 miles away from our main cargo base.
 13. BWIA. No. We need to be with our passenger flights.
 14. DELTA AIR LINES, INC. We do not see a current or near term requirement that would provide mutual benefit to use Calverton Airport for cargo operations.
 15. FAST AIR CARRIER, S.A. Maybe. We receive freight from freight forwarders located in Manhattan, Jamaica, N.Y., New Jersey, the Northeast and Midwest, mostly by roadfeeder service. The cost to them will increase since Calverton is further than JFK Airport. Consequently, the business from them to us will decrease.
 16. FEDERAL EXPRESS. Your goal to jointly operate Calverton Airport with Grumman is to be applauded. Having a seven thousand foot and ten thousand foot runway available for civilian use will be an asset to those carriers who would choose to serve eastern Suffolk County on Long Island. Unfortunately, at this time our plans do not call for an additional airport facility in this area of

New York State. We are interested in keeping a close watch on the conversion of Calverton for joint use.

17. IBERIA AIRLINES OF SPAIN. We do not have all cargo services scheduled or plan to add these services on a regular basis in the near future. The only circumstances in which we would consider a move (to Calverton) would be a heavy scheduling of freighters to New York.

18. KLM CARGO. Maybe. As a passenger/cargo airline operating combi aircraft we must operate to JFK. However, future plans may include freighter aircraft. As such, I would be interested in reviewing plans and proposals for Calverton. The circumstances that would induce us to use air cargo facilities at Calverton Airport are: cost, proper infrastructure, market

19. KOREAN AIR. No. Airport/facilities are too far from mainstream activities around JFK Airport. This would create a disadvantage for foreign flag carriers versus U.S. flag carriers. If air cargo agents are relocated to Calverton, airlines may consider moving their operations.

20. LUFTHANSA GERMAN AIRLINES. No. To operate a separate cargo operation from our passenger operation at JFK would be too costly. JFK is already badly located as far as the infrastructure is concerned. To have a cargo facility further east on the island would mean further distances by trucks on the already crowded Long Island Expressway.

21. NORTH STAR AIRLINES. No. Cargo facilities must be close to freight forwarders and aircraft. If the aircraft is in eastern Long Island, all the cargo must be trucked from JFK or Newark to the aircraft. This is very costly.

22. NORTHWEST AIRLINES. Maybe. We would consider any alternative that offered lower costs and would not adversely impact revenue or market share. We might use Calverton if there are assurances from Calverton Airport on cost and we receive customer support.

23. NIPPON CARGO AIRLINES CO., LTD. No. It would duplicate our operations at nearby JFK Airport. Most of our cargo origin and destinations are in other directions: north, west, and south of the New York City Metropolitan Area.

24. LYMPIC AIRWAYS. No. We do not operate any all cargo aircraft to/from the United States.

25. QUANTAS AIRWAYS. No. All of the major freight forwarders are located at JFK. We might use Calverton if the major forwarders relocated to this site.

26. UNITED PARCEL SERVICE CO. No. Being an Express Air Carrier, it is critical for UPS to operate in airports that are closest in proximity to our customer base. Given Calverton's location in eastern Long Island, UPS would incur additional operating expense and time delays in servicing our major customer base of western Long Island and metropolitan New York City. We do not foresee UPS moving our operation out of either Newark or John F. Kennedy airports and relocating to Calverton because of the additional operating expense involved in servicing New York City. However, if UPS' volume base in eastern Long Island were to grow to the point where we would need to fly an additional aircraft to the New York City metro/Long Island area, we would consider flying that additional aircraft to Calverton, given the right circumstances.

Although most of the foregoing responses were negative, the following air freight providers said maybe or gave specific circumstances under which they would consider using Calverton: Aeromexico Cargo, Airborne Express, Air Canada, Fast Air Carrier S.A., Iberia Airlines of Spain, KLM Royal Dutch Airlines, Korean Air, Northwest Airlines, Qantas Airways, United Parcel Service Company.

These responses appear to confirm our original finding that there is a *modest* level of interest on the part of air cargo providers in using potential air cargo facilities at Calverton Airport

Comparative Costs of Operation

The foregoing interviews suggested that the cost of operating at given airports was a major locational consideration. Therefore, the costs of operating at various regional airports including Kennedy, Islip MacArthur, Republic, Westhampton, and Stewart were analyzed.

Rates and charges at airports depend upon the size of the airport, the rental space and facilities available, the amount of available land for additional construction, the volume of air and ground activity, and the number of enplanements. Two categories of charges are generally imposed: landing fees and terminal and building rental fees. These are the major direct charges pertaining to commercial air carriers. These costs have been compared for each of the foregoing airports. It is believed that the costs associated with Westhampton airport most closely approximate potential costs at Calverton because they accurately reflect real estate prices on eastern Long Island.

Since a cargo facility at Calverton would most likely siphon business from Kennedy Airport, a thorough understanding of the fees imposed at Kennedy is useful. Kennedy has the highest terminal and building rental fees, \$40.00 per square foot, of any of the regional airports studied. Comparable

fees are \$25.00 at Republic, \$17.00 at MacArthur, and \$9.50 at Stewart. Kennedy was also characterized by the highest landing fees. It charges \$2.50 per thousand pounds as compared with \$0.85 at MacArthur, \$0.70 at Westhampton, \$0.55 at Stewart, and \$0.30 at Republic.

Discussions with air cargo carriers suggest that 6,000 square feet of space constitutes a moderate-sized operation for an air cargo carrier. At current rental costs, renting 6,000 square feet of space at Kennedy would cost a carrier approximately \$240,000 annually. The same amount of space would cost approximately \$150,000 at Republic, \$102,000 at MacArthur, \$57,000 at Stewart and \$25,500 at Westhampton.

Assuming that each of these airports could support the landing of a 727 with a 150,000 pound maximum landing weight, the cost of landing one 727 weekly for 52 weeks would be \$19,500 at Kennedy, \$6,630 at MacArthur, \$5,460 at Westhampton, \$4,290 at Stewart, and \$2,340 at Republic. Given these assumptions, total annual costs for rental and landing fees would be \$259,500 at Kennedy, \$152,300 at Republic, \$108,600 at MacArthur, and \$61,300 at Stewart and \$31,000 at Westhampton.

These findings are summarized in Table 2-28.

TABLE 2-28
Airport Cost Comparisons, New York Metropolitan Region
Rental Costs and Landing Fees

<i>Airport</i>	<i>Rental Cost Per Square Foot¹</i>	<i>Landing Fees Per 1,000 Pounds²</i>	<i>Annual Rental Cost³</i>	<i>Cost of Landing a 727⁴</i>	<i>Cost of 52 Landings Annually</i>	<i>Total Annual Rental and Landing Fees</i>
Kennedy	\$40.00	\$2.50	\$240,000	\$375.00	\$19,500	\$259,500
MacArthur	17.00	0.85	102,000	127.50	6,630	108,630
Republic	25.00	0.30	150,000	45.00	2,340	152,340
Westhampton	4.25	0.70	25,500	105.00	5,460	30,960
Stewart	9.50	0.55	57,000	82.50	4,290	61,290

Note: ¹Rental costs differ for warehouse, counter, terminal and office space. Since some Long Island airports do not have all types of spaces, one uniform rental rate has been used.

²Represents a flat charge per aircraft

³Based on 6,000 square feet

⁴With a landing weight of 150,000 pounds

It is clear from the foregoing statistics that the cost of doing business is much cheaper at east end satellite airports than at a large hub airport such as Kennedy.

Other costs of doing business are also significantly higher at Kennedy than at east end airports. For example, commercial air carriers must also pay for a share of airport security operations. Minimum security standards are specified in Part 107 of the Federal Air Regulations. Security costs are significantly higher in hub airports than in satellite airports because security operations in hub airports usually exceed Federal standards. Kennedy is a category *x* airport whose security plan must be filed with the Port Authority and approved by the Federal Aviation Administration. Most category *x* airports have computerized access card systems to which all airlines using the airport must contribute. This amounts to one-time charge of \$30,000 to \$50,000 per airline. In addition, airlines must provide security for their own facilities. At Kennedy, this involves a minimum cost of several hundred thousand dollars. At smaller airports, by contrast, airlines pay only for checkpoint security.

Kennedy also imposes an array of costly charges most of which are not imposed at the other regional airports studied. These charges are listed in Table 2-29.

TABLE 2-29
Miscellaneous Fees Charged by Kennedy Airport

<i>Type of Fee</i>	<i>Amount</i>
Public Passenger Ramp and Apron Area Charges	\$50 for first 15 minutes; \$100 for every 15 minutes thereafter
Public Area Parking and Storage Area Charges	\$15 to \$45 for first eight hours
General Terminal Charges	\$235 per plane arrival

Source: Long Island Regional Planning Board

If Calverton is to become a cargo facility, a *full-service fixed base operator* (FBO) will be needed there. Fixed base operators provide a number of services for air carriers including fueling, aircraft maintenance, hangar and terminal maintenance, leasing of ground equipment, ground handling, renting of hangar space, tie-downs, and de-icing.

Fixed base operators generally pay the airport at which they are based a percentage of their gross revenues, a fuel flowage fee, and space rental charges. The cost to the carriers for FBO services depends to some extent on what the airport charges the FBO. It also depends on the kinds of services that the FBO is asked to provide. If Kennedy charges its FBOs more than Calverton does, a likely possibility, the extra cost would be passed on to carriers operating out of Kennedy further inflating the cost of doing business there. A list of FBOs operating at the various regional airports is shown in Table 2-30.

TABLE 2-30
Fixed Base Operators at New York Area Airports

<i>Airport</i>	<i>Operator</i>
Kennedy	AMR Services, Ogden Allied
MacArthur	Long Island Jet Center, Mid-Island Air Service, Hudson General
Republic	Beechcraft East, Million Air
Brookhaven	Mid-Island Air, Brookfield Aviation
Westhampton	Sky East Service, Malloy Air East

The comparative cost analysis clearly shows that air cargo providers operating out of a potential cargo facility at Calverton Airport would have significantly lower operating costs than they currently have at Kennedy Airport.

Air cargo companies operating at Calverton would also have a competitive cost advantage over Kennedy Airport for companies located in Westchester County. Trucking cargo from Westchester to Calverton would cost approximately double what it would cost to truck cargo from Westchester to JFK. If an integrated carrier trucked 150,000 pounds of cargo annually from Westchester, the total trucking cost to JFK would be approximately \$9,000, while the total trucking cost to Calverton would be approximately \$18,000. However, when the annual rental cost and the annual cost of enplanements are included, the total annual cost of operating at John F. Kennedy Airport would be \$268,500. The annual cost of operating at East Hampton Airport, which closely approximates potential operating costs at Calverton, would be approximately \$87,936 or \$180,564 less than at JFK.

PART FIVE

An Economic Development Plan For Calverton

Interviews with Long Island manufacturers, freight forwarders and other air cargo providers suggested that at least a modest level of air cargo operations at Calverton would be feasible. Based on these findings, which were presented in Parts Three and Four, the staff developed three alternative economic development plans for the available acreage within the fence at Calverton. These scenarios were based on an analysis of the types of facilities available at other cargo airports such as Stewart, Kennedy, Newark, Dulles, Hartsfield (Atlanta), Miami and Bradley (Connecticut). They are also based on our perceptions of Calverton's unique locational advantages.

The Scenarios

All three scenarios envision a *Fixed Base Operator* (FBO) at Calverton. The FBO would provide such services as fueling, routine aircraft maintenance, hangar and terminal maintenance, leasing of ground equipment, ground handling, renting of hangar space, tie-downs, and de-icing. All three scenarios also envision an airport manager who would perform routine administrative and maintenance functions including repairs on buildings, roads, lighting and airfield pavements. Facilities for sanitary and industrial waste treatment will also be needed in all three scenarios. These facilities will be discussed in greater detail in the environmental segment of the report.

The three scenarios envision an integrated carrier, such as DHL, which would conduct modest operations — one cargo flight per day — out of Calverton. In all three scenarios there would also be an industrial park specializing in light, high-technology, high value-added industries such as instruments, cameras, pharmaceuticals and similar enterprises. It is anticipated that the park would be competitive for firms that deal with perishable commodities or that require just-in-time delivery and use of parts and equipment.

We focused on high value-added industries because such industries are most likely to afford to ship their products by air. An air cargo facility would also be needed in all three scenarios to accommodate the operations of the integrated carrier, the freight forwarders, and the cargo generated by firms in the on-site industrial park.

Scenario 1 also envisions a *Foreign Trade Zone* (FTZ). Islip MacArthur Airport already has a foreign trade zone consisting of 52.6 acres. The zone contains 430,000 square feet of office/warehousing/manufacturing space distributed over thirteen buildings. Approximately 70% of this square footage is occupied. Since the Federal government considers all of Long Island as one foreign trade zone, any foreign trade zone at Calverton would be considered a sub-zone of the Islip Foreign Trade Zone.

In a foreign trade zone, foreign and domestic merchandise is generally considered to be in international commerce. Foreign or domestic merchandise may enter this enclave without a formal customs entry or the payment of custom duties or government excise taxes. Merchandise entering the zone may be stored, tested, relabeled and repackaged, repaired, assembled, manufactured and/or processed. The advantage of an FTZ is that if the final product is exported from the United States, no U.S. customs duty or excise tax is levied. Calverton Airport, by virtue of its geographic location, is particularly suited to a foreign trade zone from which goods can be exported to European markets. If the final product is imported into the United States, customs duty and excise taxes are due only at the time of transfer from the foreign-trade zone to the United States. Moreover, the duty paid is the lower of that applicable to the product itself or its component parts. Thus, an FTZ provides unique opportunities to realize customs duty savings by zone users.

Throughout the United States, foreign trade zones have been used by the following types of firms and/or for the following purposes:

- A major U.S. company that manufactures typewriters from domestic and foreign components for both domestic and export markets.
- A major electronics firm engaged in warehousing, testing, and repairing components.
- A European firm repacking merchandise for export to Canada.
- Major U.S. firms producing a wide variety of pharmaceutical goods for import and export.
- Foreign firms adding or subtracting components to meet U.S. standards
- Manufacture of a wide range of office equipment by U.S.-based firms, including copiers, computers and printers.
- Flavor and fragrance processing for import and export.
- Production of photographic materials for import and export.
- Production of window coverings for import and export
- Production of consumer appliances for import and export.

Firms use a foreign trade zone to maintain the cost-competitiveness of their U.S.-based operations vis-a-vis their foreign-based competitors. Use of an FTZ provides an opportunity to reduce certain operating costs associated with a U.S. location that are avoided when operating from a foreign site. A foreign trade zone at Calverton could stimulate existing local business activity in addition to attracting new jobs.

Scenario 2 envisions an aviation maintenance facility instead of a foreign trade zone.

In Scenario 3, Calverton would have both a foreign trade zone and an aviation maintenance facility. An aviation maintenance facility generally performs a *Home Base* or **D Level** maintenance check. All planes are brought in for a **D** level maintenance check after about 10,000 hours of flying time. Such a check requires that the plane be completely dismantled and serviced through to the interior. It is necessary to be a Federally-licensed mechanic or to work under one in order to perform **D** level maintenance. **D** level main-

tenance is a highly specialized operation that is not performed by regular fixed base operators.

The facilities envisioned at Calverton under Scenarios 1, 2, and 3 are summarized in Table 2-31.

TABLE 2-31
Facilities Envisioned For Calverton Under Scenarios 1, 2, and 3

Scenario 1	Scenario 2	Scenario 3
Fixed Base Operator	Fixed Base Operator	Fixed Base Operator
Airport Manager	Airport Manager	Airport Manager
Air Cargo Facility	Air Cargo Facility	Air Cargo Facility
Foreign Trade Zone	Aviation Maintenance Facility	Foreign Trade Zone
Industrial Park	Industrial Park	Industrial Park
Integrated Carrier	Integrated Carrier	Aviation Maintenance Facility
—	—	Integrated Carrier

Source: LIRPB Staff

Background Information Regarding Square Footage Required; Jobs Generated

The square footage required to accommodate each of the foregoing facilities and the jobs likely to be generated by each were estimated based on interviews with knowledgeable sources.

FACILITIES NEEDED TO ACCOMMODATE AN INTEGRATED CARRIER. We developed information regarding the square footage and employment that would be associated with a modest integrated carrier operation. In doing so, we used the Emery courier service operation at Stewart Airport as a model. According to Mr. Wally Ganter, the chief engineer at Lockheed, which has the management contract at Stewart Airport, Emery lands one plane daily at Stewart Airport. Emery occupies thirteen of the sixteen bays at Stewart's cargo facility. Emery employs between twenty and thirty people at Stewart for its operations. Discussions with Mr. Bill Concannon of Air France suggested that these employment numbers are realistic. He said that it requires approximately thirteen cargo handlers to turn around a 747 aircraft containing 180,000 pounds of freight. The other employees (this represents the difference between 13 and 20 to 30)

are either managerial or clerical support staff. Integrated carriers are relatively low-wage operations because they are generally not unionized. Our discussions indicated that hourly wages of \$6 to \$7 are common.

FACILITIES NEEDED TO ACCOMMODATE A FIXED BASE OPERATOR. At Stewart Airport, the fixed base operator is AMR. They occupy two hangars, each of which is between 70,000 and 100,000 square feet in size. At Stewart, AMR does maintenance work, usually on small planes, and unloads cargo from the belly of passenger planes. AMR employs 100 persons at Stewart at an average hourly wage of \$6 to \$7.

FACILITIES NEEDED TO ACCOMMODATE AN AIRPORT MANAGER. At Stewart Airport, Lockheed, the firm with the management contract, employs thirty-five people full-time plus summer temporaries. Their functions include both administration and maintenance. The maintenance function includes repairs on buildings, roads, lighting, and airfield pavements. Lockheed's maintenance employees are paid approximately \$13 an hour. Its administrative employees, which include accountants and bookkeepers, earn comparable salaries.

FACILITIES NEEDED FOR AN INDUSTRIAL PARK. Mr. Gary Nelson of Heartland Associates was able to tell us how the Edgewood Industrial Park in Brentwood functions. The park has 1.8 million square feet of space, 95% of which is occupied. The park specializes in light manufacturing and distribution. It employs about 1,500 people at average hourly wages of between \$5 and \$7. The park contains thirty separate buildings. They range in size from 15,000 square feet to 280,000 square feet.

Mr. Walter Pollock of the Parr Organization provided information regarding the Brookhaven R and D Plaza in Yaphank. Unlike the Edgewood Industrial Park which contains food distributors, injection molders, and manufacturers of plastic bottle caps, the Brookhaven R and D Plaza is primarily a high-technology industrial park. Its tenants include pharmaceutical firms, electronics firms, and a manufacturer of sports medicine equipment. Some of these firms do business with the Brookhaven National Laboratory. Most of

the jobs at the park are well-paying white-collar and skilled blue-collar jobs.

We developed a model for a potential industrial park at Calverton based on these and related conversations.

FACILITIES NEEDED FOR AN AVIATION MAINTENANCE OPERATION. Mr. Lee Roche, the Assistant Manager at MacArthur Airport, provided extremely useful information concerning the operations and space requirements of aviation maintenance facilities. A large hangar is needed for D level maintenance. An absolute minimum would be about 100,000 square feet. This would allow for servicing one 747 aircraft at a time and would require a workforce of about 150 people. Since most such maintenance people are licensed mechanics, the average hourly wage at such a facility would be between \$18 and \$20.

An aviation maintenance facility at Calverton could also be used to retrofit jet aircraft. Valsam Partners, a Purchase, New York firm that retrofits jet aircraft has already expressed interest in operating out of Calverton. Valsam specializes in retrofitting 727s with quiet Stage 3 engines. Valsam has exclusive U.S. rights to retrofit the 727 to Stage 3, which is the most quiet aircraft designation. The company has already done extensive Stage 3 work for Federal Express and other air carriers. A typical retrofitting of a 727 — including the replacement of the two wing-mounted engines and the installation of a hush kit to muffle the tail engine — requires 8,000 to 9,000 manhours. The Federal Aviation Administration estimates that more than 400 retrofitted 727s will be in service by the year 2003 and that they will comprise 6.9% of the U.S. jet fleet.

FACILITIES REQUIRED FOR A FOREIGN TRADE ZONE. The proposed foreign trade zone for Calverton was modeled on the Islip MacArthur Foreign Trade Zone. That zone currently contains 600 jobs paying average hourly wages of between \$5 and \$6. Approximately 301,000 square feet of 430,000 available square feet within the zone are currently occupied.

THE AIR CARGO FACILITIES REQUIRED. Mr. Wally Ganter provided detailed information about the cost of construct-

ing a cargo facility. He told us that Stewart had built a 50,000 square foot facility five years ago. The total cost was \$1 million for site work and \$2.5 million for the building itself. The facility measures 100 feet by 500 feet and has sixteen bays. It was pre-engineered, which means that it used prefabricated metal which was laid over a frame. The job employed fifteen skilled construction workers and five office support workers for six months. The construction workers were paid between \$15 and \$20 hourly. The office support staff was paid between \$8 and \$10 hourly. The same cost factors would apply to the construction of hangar and warehouse facilities which are also usually pre-engineered.

The following estimates of square footage requirements, jobs generated and average wages were largely based on the foregoing discussions.

Potential Activity At Calverton: Space Requirements, Jobs Generated, Average Salaries

1. THE CONSTRUCTION PHASE. Our discussions suggested that with respect to the construction of airport facilities, including cargo, light manufacturing, warehouse, and office facilities, approximately one construction job is generated for every 5,300 square feet built. In order to estimate how many jobs would be generated during the construction phase, it was necessary to first estimate the total square footage to be constructed under each of the three scenarios.

It was estimated that 200,000 square feet would be needed for the fixed base operator. This is the square footage occupied by the fixed base operator at Stewart Airport. It was estimated that a 130,500 square foot facility would be needed for the airport manager. This facility would include a U.S. Custom's operation as well. Once again, this square footage was patterned on the square footage occupied by the Airport Manager's operation at Stewart Airport. We envision an air cargo facility of about 500,000 square feet. This facility would service the operations of at least one integrated carrier (seven flights per week), the operations of freight forwarders, and would accommodate the cargo generated by firms in the on-site industrial park.

By way of comparison, Stewart airport currently has 250,000 square feet of cargo space in place or under construction and plans on additional 250,000 square foot facility.

Based on discussions with Mr. Roche at MacArthur Airport, we envision an aviation maintenance facility of 1,305,000 square feet. A facility of this size could accommodate D level maintenance operations for several 747 aircraft. It could also accommodate a retrofitting operation for 727 jet aircraft.

We envision an industrial park whose buildings would ultimately contain 4,400,000 square feet of space in the aggregate. According to the Institute of Transportation Engineers' Trip Generation manual, Fourth edition, industrial parks specializing in light manufacturing industries require 440 square feet per employee. We currently estimate that as many as 10,000 jobs could be attracted to an industrial park at Calverton provided that a modest air cargo operation was available. This would generate a need for 4,400,000 square feet of space.

It is estimated that 540,000 square feet of space would be needed for a foreign trade zone at Calverton. MacArthur Airport currently has a foreign trade zone comprising 430,000 square feet of which 301,000 square feet are currently occupied. A slightly larger zone was projected for Calverton because of the availability of a modest air cargo operation.

The estimated square footage for facilities under each scenario is summarized in Table 2-32. Under scenario 1, 5,770,500 square feet would be constructed. Under scenarios 2 and 3, the square footage would be 6,535,500 and 7,075,500 respectively. Given the ratio of one job per 5,300 square feet constructed, it is estimated 1,089 jobs would be generated during the construction phase under scenario 1, 1,233 jobs would be generated under scenario 2, and 1,335 jobs would be generated under scenario 3.

TABLE 2-32
Square Footage Required For Facilities Envisioned Under Scenarios 1, 2, and 3

<i>Scenario 1</i>	<i>Sq. Ft.</i>	<i>Scenario 2</i>	<i>Sq. Ft.</i>	<i>Scenario 3</i>	<i>Sq. Ft.</i>
Fixed Base Operator	200,000	Fixed Base Operator	200,000	Fixed Base Operator	200,000
Airport Manager/U.S. Customs	130,500	Airport Manager/U.S. Customs	130,500	Airport Manager/U.S. Customs	130,500
Air Cargo Facility/Integrated Carrier	500,000	Air Cargo Facility/Integrated Carrier	500,000	Air Cargo Facility/Integrated Carrier	500,000
Foreign Trade Zone	540,000	Aviation Maintenance Facility	1,305,000	Foreign Trade Zone	540,000
Industrial Park	4,400,000	Industrial Park	4,400,000	Aviation Maintenance Facility	1,305,000
				Industrial Park	4,400,000
Total	5,770,500	Total	6,535,500	Total	7,075,500

In order to estimate the economic impact of these jobs, it was necessary to estimate how many would be relatively high-wage construction jobs and how many would be lower-wage administrative and clerical support jobs. We based our estimates on Mr. Wally Ganter's cost data for constructing a 50,000 square foot cargo facility at Stewart airport. On that job, three-quarters of the workers were skilled construction workers and the remainder were administrative and clerical support staff. At current wages we estimate an average hourly wage of \$22 for the construction workers and \$10 hourly for the clerical support staff. Given the projected mix of construction and clerical workers, the average hourly wage for the construction phase would be about \$19. The average weekly wage would be \$760 for a forty hour week. Based on these estimates, the total wages injected into the Long Island economy during the construction phase would range between \$43.0 million and \$52.7 million. These estimates are summarized in Table 2-33.

The foregoing amounts refer to wages and salaries only. Other costs of construction, such as materials and equipment have not been included.

2. THE PERMANENT PHASE. This section projects how many jobs could be generated at Calverton during the permanent phase of operations and the payroll associated with those jobs.
 - FIXED BASE OPERATOR. The fixed base operator is projected to employ 100 people at Calverton at an

TABLE 2-33
Wages Generated During the Construction Phase Under Scenarios 1, 2, and 3

	<i>Scenario 1</i>	<i>Scenario 2</i>	<i>Scenario 3</i>
Total Square Feet	5,770,500	6,535,500	7,075,500
Total Jobs	1,089	1,233	1,335
Average Hourly Salary	\$19	\$19	\$19
Average Weekly Salary	\$760	\$760	\$760
Average Annual Salary	\$39,520	\$39,520	\$39,520
Total Payrolls Injected into the Economy	\$43,037,280	\$48,728,160	\$52,759,200

Source: LIAPB staff

average hourly wage of \$8.00. This is the size and the prevailing wage associated with the fixed base operation at Stewart Airport.

- AIRPORT MANAGER/U.S. CUSTOMS OPERATION. It is projected that 35 persons would be employed in the management/customs operation at Calverton at an average hourly wage of \$13.00. Once again, this is the size and the prevailing wage associated with the airport manager's operation at Stewart Airport.
- AIR CARGO FACILITY. The 500,000 square foot air cargo facility is projected to generate 370 jobs at an average hourly wage of \$7.00. These projections are based on the fact that Emery, an integrated carrier, currently employs 30 persons at an average hourly wage of \$7.00 to service 40,500 square feet of cargo space at Stewart Airport.

- **INDUSTRIAL PARK.** The 4.4 million square foot industrial park could generate as many as 10,000 jobs. This projection incorporates a ratio of 440 square feet per job, the standard used for light manufacturing by the Institute of Transportation Engineers. These workers are projected to earn an estimated average hourly wage of \$7.00. The 1990 census indicated that 153,165 blue-collar workers lived in Suffolk. Many of them could presumably fill potential jobs at the Calverton Industrial Park. The Park could also house an Agricultural and Environmental Technology International Incubator Program. This program has been proposed by the Town of Riverhead to provide a stimulus to the existing agricultural and marine economies of eastern Long Island.
- **FOREIGN TRADE ZONE.** The 540,000 square foot foreign trade zone could generate an estimated 1,075 jobs at an average hourly wage of \$7.00. This projection reflects the current relationship between jobs and square footage in the foreign trade zone at MacArthur Airport. At MacArthur, 600 employees currently occupy 301,000 square feet of space, which is equivalent to 502 square feet per job. They earn an average hourly wage of \$7.00.
- **AVIATION MAINTENANCE FACILITY.** This 1,305,000 square foot facility is projected to generate approximately 600 jobs at an average hourly wage of \$15.00. This would allow for servicing three 747 aircraft simultaneously. It could also accommodate a retrofitting operation. This projection is based on our discussions with Mr. Lee Roche, the Assistant Manager at MacArthur Airport.

Table 2-34 summarizes our projections of potential employment at Calverton under Scenarios 1, 2, and 3.

Table 2-35 projects the wages and salaries that would be injected into the Long Island economy annually if the foregoing developments occurred. These figures are predicated on a 40-hour work week and a 52-week year. The estimates range from 169.2 million under scenario 1 to almost \$188.0 million under scenario 3.

Site Plans For Calverton

We have developed site plans for Calverton based on scenarios 1, 2, and 3. The structures envisioned in scenario 1 would occupy about 133 acres. The structures envisioned in scenario 2 would occupy about 150 acres. The structures envisioned in scenario 3 would occupy about 163 acres.

TABLE 2-34
Projected Employment During the Permanent Phase
Under Scenarios 1, 2, and 3

<i>Function</i>	<i>EMPLOYMENT</i>		
	<i>Scenario 1</i>	<i>Scenario 2</i>	<i>Scenario 3</i>
Fixed Base Operator	100	100	100
Airport Manager/Customs Operation	35	35	35
Air Cargo Facility	370	370	370
Industrial Park	10,000	10,000	10,000
Foreign Trade Zone	1,075	—	1,075
Aviation Maintenance Facility	—	600	600
Total	11,580	11,105	12,180

Source: LIRPB Staff

TABLE 2-35
Projected Annual Wages and Salaries During the Permanent
Phase Under Scenarios 1, 2, and 3

<i>Function</i>	<i>ANNUAL WAGE AND SALARY PAYMENTS</i>		
	<i>Scenario 1</i>	<i>Scenario 2</i>	<i>Scenario 3</i>
Fixed Base Operator	\$1,664,000	\$1,664,000	\$1,664,000
Airport Manager/Customs Operation	946,400	946,400	946,400
Air Cargo Facility	5,387,200	5,387,200	5,387,200
Industrial Park	145,600,000	145,600,000	145,600,000
Foreign Trade Zone	15,652,000	—	15,652,000
Aviation Maintenance Facility	—	18,720,000	18,720,000
Total	169,249,600	172,317,600	187,969,600

Source: LIRPB Staff

PART SIX

The Impact of the Calverton Economic Development

Alternatives on the Long Island Economy

This chapter traces the impact of Calverton economic development scenarios 1, 2, and 3 on the Long Island economy. It also analyzes the economic impact of a possible pull out by the Grumman Corporation from the Calverton facility. The direct impacts of scenarios 1, 2, and 3 in terms of employment and wages generated were described in Part Five. This chapter describes the indirect or multiplier effects of these development projects on Long Island's output, earnings, and employment.

Methodology, Data Sources

THE MULTIPLIER DEFINED. The mechanism whereby a change in output or employment in one industry affects the level of output or employment in other industries is known as the multiplier. The impact of the original increase (or decrease) in output or employment is multiplied through successive rounds of business transactions so that the ultimate effect on output, earnings, and employment is actually a multiple of the original change. Hence, the term multiplier. Multipliers can operate upward or downward. If output in a given industry increases by \$100 and, as a result, ten new jobs are created within the Long Island economy, then ten jobs can be lost if output in that industry declines by \$100.

THE INPUT-OUTPUT MODEL USED TO CALCULATE MULTIPLIERS. In order to determine the multiplier effects associated with the potential economic development of Calverton Airport, a series of input-output equations that describe interindustry relationships on Long Island were used. An input-output table shows the industrial distribution of inputs purchased and outputs sold for each industry. The input-output multipliers used in the following analysis are specific to the Long Island economy. They were developed for the Long Island

Regional Planning Board by the Bureau of Economic Analysis of the U.S. Commerce Department.

The model uses three types of multipliers — for output, earnings, and employment to describe the network of linkages between Long Island industries. The output multipliers show how an extra dollar of output in one industry, e.g. the construction industry, affects the level of output in all other Long Island industries. The earnings multipliers show how earnings levels throughout the Long Island economy change as the level of output in each industry changes. The employment multipliers show how employment levels throughout the Long Island economy change in response to output changes in each industry. Through these multipliers, the model is able to portray the impact of any significant economic development project on Long Island's major industries and on the Long Island economy as a whole.

The Economic Impact of Scenario 1

The economic impact of scenario 1 has been estimated both for the construction phase and the permanent phase of operation.

THE CONSTRUCTION PHASE. Scenario 1 would involve construction of 5,770,500 square feet of cargo, industrial, and related space at Calverton Airport (See Table 2-32). We based our estimates of the potential cost of constructing this amount of square footage on the fact that it cost \$3.5 million to construct a 50,000 square foot cargo facility at Stewart Airport five years ago. Since construction costs have risen since that time, the construction cost estimates based on this relationship are conservative and probably underestimate the true impact on the Long Island economy.

If it costs approximately \$3.5 million to construct a 50,000 square foot cargo facility, then it would cost approximately \$403,935,000 to construct 5,770,500 square feet of cargo and related space. Of this amount, \$43,037,280 would be spent on salaries (See Table 2-33) leaving \$360,897,720 for

other construction expenses such as the purchase of materials and equipment. Assuming that three-quarters of all materials and equipment used in the project is purchased on Long Island, the construction phase of scenario 1 would inject a total of \$313,710,570 (\$43,037,280 plus \$270,673,290) into the Long Island economy.

The indirect or multiplier impact of this additional spending on total Long Island output, earnings, and employment is shown in Table 2-36. The figures in parenthesis are the actual multipliers for each industry taken directly from our input-output model.

The findings show that if an additional \$313,710,570 in construction spending were injected into the Long Island economy, total Long Island output would expand by approximately \$610 million including the original expenditure. This is equivalent to a multiplier of almost 1.95. The greatest impact would occur in the construction industry itself where total output would expand by more than \$319 million including the original \$313.7 million increase in construction spending. However, there would be ripple effects

in other industries as well. Manufacturing output would expand by \$72 million and service industry output would expand by a like amount. Construction spending of this magnitude would also have an impact on Long Island's agricultural and fishing industries where output would expand by more than \$5 million.

Earnings would also increase because the increased construction spending would induce firms to hire additional workers and/or offer overtime to existing workers. For every dollar spent during the construction phase, earnings on Long Island would increase by approximately \$0.67. Thus, with an expenditure of \$313,710,570, total earnings on Long Island would increase by more than \$211 million. The greatest earnings increase, almost \$111 million, would occur in the construction industry itself.

Although only 1,089 construction jobs would be created at the Calverton site itself, (See Table 2-33) the project would generate a total of 8,313 jobs throughout the Long Island economy during the construction phase. Of these, almost 3,800 or 46% of the total would be in the construction indus-

TABLE 2-36
The Economic Impact of Additional Construction Spending of \$313,710,570 Under Calverton Economic Development Scenario 1

<i>Industry</i>	<i>Output Increase*</i>	<i>(\$)</i>	<i>Earnings Increase*</i>	<i>(\$)</i>	<i>Employment Increase**</i>	<i>(No.)</i>
Construction	\$319,263,247	(1.0177)	\$110,739,831	(.3530)	3,796	(12.1)
Manufacturing	72,027,947	(0.2296)	20,422,558	(.0651)	753	(2.4)
Transportation, Communications, Utilities	26,822,254	(0.0855)	8,501,556	(.0271)	282	(0.9)
Wholesale Trade	29,080,970	(0.0927)	11,387,694	(.0363)	345	(1.1)
Retail Trade	36,013,973	(0.1148)	17,881,502	(.0570)	1,192	(3.8)
Finance, Insurance, Real Estate	50,695,628	(0.1616)	7,780,022	(.0248)	251	(0.8)
Services	71,745,607	(0.2287)	33,284,691	(.1061)	1,663	(5.3)
Other (Agriculture & Fishing)	5,050,740	(0.0161)	1,380,327	(.0044)	31	(0.1)
Total	610,700,366	(1.9467)	211,378,181	(.6738)	8,313	26.5

*Represents the impact of each \$1 of added construction spending.

**Represents the impact of each \$1 million of added construction spending.

Source: LIRPB based on Long Island RIMS II multipliers developed by the Bureau of Economic Analysis, U.S. Commerce Department

try. This figure includes the 1,089 on-site construction jobs. In addition, an estimated 753 additional manufacturing jobs, 1,192 retail jobs and 1,663 service jobs would be created on Long Island during the construction phase.

THE PERMANENT PHASE. Under scenario 1, an estimated 11,580 direct jobs would be created at Calverton during the permanent phase and an estimated \$169,249,600 in additional wages would be injected into the Long Island economy (See Tables 2-34 and 2-35).

Table 2-37 traces the secondary impact of these wages on output, earnings, and employment throughout the Long Island economy. Given the projected mix of activities at the airport, approximately three-quarters of these wages would be manufacturing wages and the remaining one-quarter would reflect wages attributable to business service employment. The distinction is significant because different multipliers are associated with a dollar of manufacturing wages and a dollar of business service wages.

The findings show that added payroll spending of \$169,249,600 at Calverton would boost total Long Island output by \$340,064,760. This is equivalent to an output multiplier of 2.01. Total Long Island earnings would increase by \$121,978,186. Thus, for every dollar of wages paid at Calverton, total Long Island earnings would increase by 72 cents. The model also indicates that 4,215 indirect jobs would be created as a result of the 11,580 jobs added at Calverton. Of these, 1,540 would be in manufacturing, 1,731 in services and 440 in retail trade.

Thus, the developments envisioned under Scenario 1 would create a total of 15,795 Long Island jobs. It should be noted that the indirect impact of the purchase of goods and services by potential firms at Calverton has not been calculated. The impact of such purchases cannot be accurately computed until actual development occurs. However, if such purchases were factored into the analysis, the number of indirect jobs generated would be greater.

The Economic Impact of Scenario 2

The same procedures were followed in evaluating the economic impact of scenario 2 under the construction phase and the permanent phase of operation.

THE CONSTRUCTION PHASE. Scenario 2 would involve construction of 6,535,500 square feet of cargo, industrial and related space at Calverton Airport (See Table 2-32). If it costs approximately \$3.5 million to build a 50,000 square foot cargo facility, it would cost approximately \$457,485,000 to construct 6,535,500 square feet of cargo and related space. Of this amount, \$48,728,160 would be spent on salaries (See Table 2-33) leaving \$408,756,840 for other construction expenses such as the purchase of materials and equipment. Once again, assuming that three-quarters of all materials and equipment used in the project were purchased on Long Island, the construction phase of scenario 2 would inject a total of \$355,295,790 (\$48,728,160 plus \$306,567,630) into the Long Island economy.

The indirect impact of this additional spending on total Long Island output, earnings, and employment is shown in Table 2-38. The figures in parenthesis represent the multipliers for each industry.

The findings show that if an additional \$355,295,790 in construction spending were injected into the Long Island economy, total Long Island output would expand by approximately \$691.7 million during the construction phase, including the original expenditure. The greatest impact would occur in the construction industry where output would expand by more than \$361 million including the original expenditure. Total Long Island earnings would increase by approximately \$239 million. Although only 1,233 jobs would be created on-site at Calverton during the construction phase (See Table 2-33), a total of 9,415 jobs would be created throughout the Long Island economy. This figure includes the 1,233 on-site jobs. The additional off-site jobs reflect the fact that the Long Island economy would have to gear up, at least temporarily, to support construction activities at Calverton.

TABLE 2-37
The Impact of Payroll Expenditures of \$169,249,600 on Long Island Output, Earnings, and Employment
Scenario 1

<i>OUTPUT INCREASE (\$)</i>					
<i>Industry</i>	<i>Manufacturing (\$126,937,200)</i>		<i>Business Services (\$42,312,400)</i>		<i>Total</i>
Construction	\$2,627,600	(0.0207)	\$947,798	(0.0224)	\$3,575,398
Manufacturing	178,803,740	(1.4086)	4,971,707	(0.1175)	183,775,447
Transportation, Communication, Utilities	10,967,374	(0.0864)	4,531,658	(0.1071)	15,499,032
Wholesale Trade	8,847,523	(0.0697)	2,183,320	(0.0516)	11,030,843
Retail Trade	9,723,390	(0.0766)	3,791,191	(0.0896)	13,514,581
Finance, Insurance, Real Estate	21,617,405	(0.1703)	8,695,198	(0.2055)	30,312,603
Services	28,484,708	(0.2244)	52,755,100	(1.2468)	81,239,808
Other (Agriculture and Fishing)	380,812	(0.0030)	736,236	(0.0174)	1,117,048
Total	261,452,552	(2.0597)	78,612,208	(1.8579)	340,064,760

<i>EARNINGS INCREASE (\$)</i>					
<i>Industry</i>	<i>Manufacturing (\$126,937,200)</i>		<i>Business Services (\$42,312,400)</i>		<i>Total</i>
Construction	\$1,205,903	(0.0095)	\$435,818	(0.0103)	\$1,641,721
Manufacturing	59,013,104	(0.4649)	1,358,228	(0.0321)	60,371,332
Transportation, Communication, Utilities	3,262,286	(0.0257)	1,366,691	(0.0323)	4,628,977
Wholesale Trade	3,465,386	(0.0273)	854,710	(0.0202)	4,320,096
Retail Trade	4,836,307	(0.0381)	1,882,902	(0.0445)	6,719,209
Finance, Insurance, Real Estate	3,274,980	(0.0258)	1,167,822	(0.0276)	4,442,802
Services	12,922,207	(0.1018)	26,699,124	(0.6310)	39,621,331
Other (Agriculture and Fishing)	165,018	(0.0013)	67,700	(0.0016)	232,718
Total	88,145,191	(0.6944)	33,832,995	(0.7996)	121,978,186

<i>EMPLOYMENT INCREASE (\$)</i>					
<i>Industry</i>	<i>Manufacturing (\$126,937,200)</i>		<i>Business Services (\$42,312,400)</i>		<i>Total</i>
Construction	38	(0.3)	17	(0.4)	55
Manufacturing	1,498	(11.8)	42	(1.0)	1,540
Transportation, Communication, Utilities	102	(0.8)	47	(1.1)	149
Wholesale Trade	114	(0.9)	25	(0.6)	139
Retail Trade	317	(2.5)	123	(2.9)	440
Finance, Insurance, Real Estate	102	(0.8)	38	(0.9)	140
Services	711	(5.6)	1,020	(24.1)	1,731
Other (Agriculture and Fishing)	13	(0.1)	8	(0.2)	21
Total	2,895	(22.8)	1,320	(31.2)	4,215

Note: The manufacturing multipliers pertain to aircraft-related and other high-technology manufacturing.

Source: LIRPB based on Long Island RIMS II Multipliers, Bureau of Economic Analysis, U.S. Commerce Dept.

TABLE 2-38
The Economic Impact of Additional Construction Spending of \$355,295,790 Under Calverton Economic Development Scenario 2

<i>Industry</i>	<i>Output Increase*</i>	<i>(\$)</i>	<i>Earnings Increase*</i>	<i>(\$)</i>	<i>Employment Increase**</i>	<i>(No.)</i>
Construction	\$361,584,525	(1.0177)	\$125,419,414	(.3530)	4,299	(12.1)
Manufacturing	81,575,913	(0.2296)	23,129,756	(.0651)	853	(2.4)
Transportation, Communications, Utilities	30,377,790	(0.0855)	9,628,516	(.0271)	320	(0.9)
Wholesale Trade	32,935,920	(0.0927)	12,897,237	(.0363)	391	(1.1)
Retail Trade	40,787,957	(0.1148)	20,251,860	(.0570)	1,350	(3.8)
Finance, Insurance, Real Estate	57,415,800	(0.1616)	8,811,336	(.0248)	284	(0.8)
Services	81,256,147	(0.2287)	37,696,883	(.1061)	1,883	(5.3)
Other (Agriculture & Fishing)	5,720,262	(0.0161)	1,563,301	(.0044)	35	(0.1)
Total	691,654,314	[1.9467]	239,398,303	(.6738)	9,415	(26.5)

*Represents the impact of each \$1 of added construction spending.

**Represents the impact of each \$1 million of added construction spending.

Source: LIRPB based on Long Island RIMS II multipliers developed by the Bureau of Economic Analysis, U.S. Commerce Department

THE PERMANENT PHASE. Under scenario 2, an estimated 11,105 direct jobs would be created at Calverton during the permanent phase and an estimated \$172,317,600 in additional wages would be injected into the Long Island economy (See Tables 2-34 and 2-35).

Table 2-39 traces the secondary impact of these wages on output, earnings, and employment throughout the Long Island economy. Once again, it has been estimated that three-quarters of total wages would be attributable to manufacturing firms and that one-quarter would reflect business service wages.

The findings show that added payroll spending of \$172,317,600 at Calverton would increase total Long Island output by \$346,229,139. Total Long Island earnings would increase by \$124,189,295. In addition, 4,290 indirect jobs would be generated. When added to the 11,105 direct jobs estimated for Calverton under scenario 2, this would bring the total number of jobs generated to 15,395. Once again, the indirect impact of the purchase of goods and services by potential firms at Calverton has not been calcu-

lated. Inclusion of such purchases would boost the number of indirect jobs created.

The Economic Impact of Scenario 3

Our evaluation of the economic impact of scenario 3 utilizes the same procedures that were used in evaluating scenarios 1 and 2.

THE CONSTRUCTION PHASE. Scenario 3 would involve construction of 7,075,500 square feet of cargo, industrial and related space at Calverton Airport. (See Table 2-32). If it costs approximately \$3.5 million to build a 50,000 square foot cargo facility, it would cost approximately \$495,285,000 to construct 7,075,500 square feet of cargo and related space. Of this amount, \$52,759,200 would reflect salaries (See Table 2-33) leaving \$442,525,800 for other construction expenses including the purchase of materials and equipment. Assuming that three-quarters of the materials and equipment used were purchased on Long Island, the construction phase of scenario 3 would inject a total of

TABLE 2-39
The Impact of Payroll Expenditures of \$172,317,600 on Long Island Output, Earnings, and Employment
Scenario 2

<i>OUTPUT INCREASE (\$)</i>					
<i>Industry</i>	<i>Manufacturing (\$129,238,200)</i>		<i>Business Services (\$43,079,400)</i>		<i>Total</i>
Construction	\$2,675,231	(0.0207)	\$964,979	(0.0224)	\$3,640,210
Manufacturing	182,044,929	(1.4086)	5,061,830	(0.1175)	187,106,759
Transportation, Communication, Utilities	11,166,180	(0.0864)	4,613,804	(0.1071)	15,779,984
Wholesale Trade	9,007,902	(0.0697)	2,222,897	(0.0516)	11,230,799
Retail Trade	9,899,646	(0.0766)	3,859,914	(0.0896)	13,759,560
Finance, Insurance, Real Estate	22,009,265	(0.1703)	8,852,817	(0.2055)	30,862,082
Services	29,001,052	(0.2244)	53,711,396	(1.2468)	82,712,448
Other (Agriculture and Fishing)	387,715	(0.0030)	749,582	(0.0174)	1,137,297
Total	266,191,920	(2.0597)	80,037,219	(1.8579)	346,229,139

<i>EARNINGS INCREASE (\$)</i>					
<i>Industry</i>	<i>Manufacturing (\$129,238,200)</i>		<i>Business Services (\$43,079,400)</i>		<i>Total</i>
Construction	\$1,227,763	(0.0095)	\$443,718	(0.0103)	\$1,671,481
Manufacturing	60,082,839	(0.4649)	1,382,849	(0.0321)	61,465,688
Transportation, Communication, Utilities	3,321,422	(0.0257)	1,391,465	(0.0323)	4,712,887
Wholesale Trade	3,528,203	(0.0273)	870,204	(0.0202)	4,398,407
Retail Trade	4,923,975	(0.0381)	1,917,033	(0.0445)	6,841,008
Finance, Insurance, Real Estate	3,334,346	(0.0258)	1,188,991	(0.0276)	4,523,337
Services	13,156,449	(0.1018)	27,183,101	(0.6310)	40,339,550
Other (Agriculture and Fishing)	168,010	(0.0013)	68,927	(0.0016)	236,937
Total	89,743,007	(0.6944)	34,446,288	(0.7996)	124,189,295

<i>EMPLOYMENT INCREASE (\$)</i>					
<i>Industry</i>	<i>Manufacturing (\$129,238,200)</i>		<i>Business Services (\$43,079,400)</i>		<i>Total</i>
Construction	39	(0.3)	17	(0.4)	56
Manufacturing	1,525	(11.8)	43	(1.0)	1,568
Transportation, Communication, Utilities	103	(0.8)	47	(1.1)	150
Wholesale Trade	116	(0.9)	26	(0.6)	142
Retail Trade	323	(2.5)	125	(2.9)	448
Finance, Insurance, Real Estate	103	(0.8)	39	(0.9)	142
Services	724	(5.6)	1,039	(24.1)	1,763
Other (Agriculture and Fishing)	13	(0.1)	8	(0.2)	21
Total	2,946	(22.8)	1,344	(31.2)	4,290

Note: The manufacturing multipliers pertain to aircraft-related and other high-technology manufacturing.
Source: LIRPB based on Long Island RIMS II Multipliers, Bureau of Economic Analysis, U.S. Commerce Dept.

\$384,653,550 (\$52,759,200 plus \$331,894,350) into the Long Island economy.

The indirect impact of this additional spending on total Long Island output, earnings, and employment is shown in Table 2-40. The figures in parenthesis represent the multipliers for each industry.

The findings show that if an additional \$384,653,550 in construction spending were injected into the Long Island economy, total Long Island output would expand by approximately \$748.8 million during the construction phase, including the original expenditure. Total Long Island earnings would increase by about \$259 million. Although only an estimated 1,335 jobs would be created on-site at Calverton during the construction phase (See Table 2-33), a total of 10,193 jobs would be created throughout the Long Island economy, including the on-site jobs. The off-site jobs would be created temporarily to support construction at Calverton.

THE PERMANENT PHASE. Under scenario 3, an estimated 12,180 direct jobs would be created at Calverton during

the permanent phase and an estimated \$187,969,600 in additional wages would be injected into the Long Island economy. (See Tables 2-34 and 2-35).

Table 2-41 traces the secondary impact of these wages on output, earnings, and employment throughout the Long Island economy. It has been estimated that three-quarters of total permanent wages would be attributable to manufacturing firms and that one-quarter would reflect business service wages.

The findings show that added payroll spending of \$187,969,600 at Calverton would increase total Long Island output by \$377,677,920. Total Long Island earnings would increase by \$135,469,690. Approximately 4,680 indirect jobs would also be created. When added to the 12,180 direct jobs estimated for Calverton under scenario 3, this brings the total number of jobs generated to 16,860. The purchase of goods and services by potential firms at Calverton would also have an indirect impact. Inclusion of such purchases would increase the number of indirect jobs created.

TABLE 2-40
The Economic Impact of Additional Construction Spending of \$384,653,550 Under Calverton Economic Development Scenario 3

<i>Industry</i>	<i>Output Increase*</i>	<i>(\$)</i>	<i>Earnings Increase*</i>	<i>(\$)</i>	<i>Employment Increase**</i>	<i>(No.)</i>
Construction	\$391,461,918	(1.0177)	\$135,782,703	(.3530)	4,654	(12.1)
Manufacturing	88,316,455	(0.2296)	25,040,946	(.0651)	923	(2.4)
Transportation, Communications, Utilities	32,887,879	(0.0855)	10,424,111	(.0271)	346	(0.9)
Wholesale Trade	35,657,384	(0.0927)	13,962,924	(.0363)	423	(1.1)
Retail Trade	44,158,228	(0.1148)	21,925,252	(.0570)	1,462	(3.8)
Finance, Insurance, Real Estate	62,160,014	(0.1616)	9,539,408	(.0248)	308	(0.8)
Services	87,970,267	(0.2287)	40,811,742	(.1061)	2,039	(5.3)
Other (Agriculture & Fishing)	6,192,922	(0.0161)	1,692,476	(.0044)	38	(0.1)
Total	748,805,067	(1.9467)	259,179,562	(.6738)	10,193	(26.5)

*Represents the impact of each \$1 of added construction spending.

**Represents the impact of each \$1 million of added construction spending.

Source: LIRPB based on Long Island RIMS II multipliers developed by the Bureau of Economic Analysis, U.S. Commerce Department

TABLE 2-41
The Impact of Payroll Expenditures of \$187,969,600 on Long Island Output, Earnings, and Employment
Scenario 3

<i>OUTPUT INCREASE (\$)</i>					
<i>Industry</i>	<i>Manufacturing (\$140,977,200)</i>		<i>Business Services (\$46,992,400)</i>		<i>Total</i>
Construction	\$2,918,228	(0.0207)	\$1,052,630	(0.0224)	\$3,970,858
Manufacturing	198,580,484	(1.4086)	5,521,607	(0.1175)	204,102,091
Transportation, Communication, Utilities	12,180,430	(0.0864)	5,032,886	(0.1071)	17,213,316
Wholesale Trade	9,826,111	(0.0697)	2,424,808	(0.0516)	12,250,919
Retail Trade	10,798,854	(0.0766)	4,210,519	(0.0896)	15,009,373
Finance, Insurance, Real Estate	24,008,417	(0.1703)	9,656,938	(0.2055)	33,665,355
Services	31,635,284	(0.2244)	58,590,124	(1.2468)	90,225,408
Other (Agriculture and Fishing)	422,932	(0.0030)	817,668	(0.0174)	1,240,600
Total	290,370,740	(2.0597)	87,307,180	(1.8579)	377,677,920

<i>EARNINGS INCREASE (\$)</i>					
<i>Industry</i>	<i>Manufacturing (\$140,977,200)</i>		<i>Business Services (\$46,992,400)</i>		<i>Total</i>
Construction	\$1,339,283	(0.0095)	\$484,022	(0.0103)	\$1,823,305
Manufacturing	65,540,300	(0.4649)	1,508,456	(0.0321)	67,048,756
Transportation, Communication, Utilities	3,623,114	(0.0257)	1,517,855	(0.0323)	5,140,969
Wholesale Trade	3,848,678	(0.0273)	949,246	(0.0202)	4,797,924
Retail Trade	5,371,231	(0.0381)	2,091,162	(0.0445)	7,462,393
Finance, Insurance, Real Estate	3,637,212	(0.0258)	1,296,990	(0.0276)	4,934,202
Services	14,351,479	(0.1018)	29,652,204	(0.6310)	44,003,683
Other (Agriculture and Fishing)	183,270	(0.0013)	75,188	(0.0016)	258,458
Total	97,894,567	(0.6944)	37,575,123	(0.7996)	135,469,690

<i>EMPLOYMENT INCREASE (\$)</i>					
<i>Industry</i>	<i>Manufacturing (\$140,977,200)</i>		<i>Business Services (\$46,992,400)</i>		<i>Total</i>
Construction	42	(0.3)	19	(0.4)	61
Manufacturing	1,664	(11.8)	47	(1.0)	1,711
Transportation, Communication, Utilities	113	(0.8)	52	(1.1)	165
Wholesale Trade	127	(0.9)	28	(0.6)	155
Retail Trade	352	(2.5)	136	(2.9)	488
Finance, Insurance, Real Estate	113	(0.8)	42	(0.9)	155
Services	789	(5.6)	1,133	(24.1)	1,922
Other (Agriculture and Fishing)	14	(0.1)	9	(0.2)	23
Total	3,214	(22.8)	1,466	(31.2)	4,680

Note: The manufacturing multipliers pertain to aircraft-related and other high-technology manufacturing
Source: LIRPB based on Long Island RIMS II Multipliers, Bureau of Economic Analysis, U.S. Commerce Dept.

Summary Economic Impact of Development Scenarios 1, 2, and 3

The foregoing analysis suggests that under Scenario 1, 8,313 temporary jobs and 15,795 permanent jobs would be created throughout the Long Island economy as a result of proposed developments at Calverton. Under Scenario 2, 9,415 temporary jobs and 15,395 permanent jobs would be created. Under Scenario 3, 10,193 temporary jobs and 16,860 permanent jobs would be created. These findings are summarized in Table 2-42.

The Impact of a Pull-Out by Grumman

A question has been raised concerning Grumman's commitment to retain its current operations at Calverton Airport. Mr. Richard Dunne of the Grumman Corporation provided the following statistics concerning Grumman's operations

TABLE 2-42
Summary: Economic Impact of Scenarios 1, 2, and 3

<i>Construction Phase</i>	<i>Scenario 1</i>	<i>Scenario 2</i>	<i>Scenario 3</i>
Square Feet Constructed	5,770,500	6,535,500	7,075,500
Amount Spent	\$313,710,570	\$355,295,790	\$384,653,550
Estimated On-Site Construction Jobs	1,089	1,233	1,335
Overall Impact on Long Island:			
Output	\$610,700,366	\$691,654,314	\$748,805,067
Earnings	\$211,378,181	\$239,398,303	\$259,179,562
Employment (Temporary)	8,313	9,415	10,193
<i>Permanent Phase (Annually)</i>			
Amount Spent (Salaries)	\$169,249,600	\$172,317,600	\$187,969,600
Estimated On-Site Permanent Jobs	11,580	11,105	12,180
Overall Impact on Long Island:			
Output	\$340,064,760	\$346,229,139	\$377,677,920
Earnings	\$121,978,186	\$124,189,295	\$135,469,690
Employment (Indirect)	4,215	4,290	4,680
Total Permanent Employment Created*	15,795	15,395	16,860

*Note: Understates permanent employment because the indirect impact of the purchase of goods and services by potential firms at Calverton Airport has not been included. Only wage and salary expenditures were factored into the model.

at Calverton. Grumman currently has 1,700 employees at the Calverton facility. Its Calverton payroll is approximately \$100 million. Grumman's payments to the Town of Riverhead were approximately \$1.1 million in 1992.

Since the economic multipliers used in the RIMS II model work downward as well as upward, it is possible to calculate the overall impact on the local economy of a complete pull-out by Grumman from the Calverton facility. The analysis portrays the secondary impact on the economy of a loss of \$100 million in Grumman payrolls at Calverton. The findings are summarized in Table 2-43.

They show that the loss of 1,700 Grumman jobs and \$100 million in payrolls at the Calverton Facility would reduce overall Long Island output by \$2,059,700. In addition, Long Island earnings would decline by \$69.4 million plus the original \$100 million decline. Approximately 2,280 jobs would be lost throughout the local economy in addition to the original 1,700 job loss for a total loss of 3,980 jobs. The Town of Riverhead would be deprived of approximately \$1.1 million in revenues. Moreover, the east end economy, already characterized by an unemployment rate of 15%, would be depressed even further. Housing values would decline and some retail and service businesses would be forced to close.

Summary: Calverton Economic Feasibility Study.

The foregoing analysis suggests that there is some potential for developing a modest air cargo operation at Calverton Airport. The presence of even a modest-sized air cargo operation could well serve as the catalyst for development of an industrial park and attendant facilities at the Calverton facility. The availability of cargo flights would render the facility uniquely competitive for those firms specializing in perishable commodities, those specializing in high-value, low-bulk technologically sophisticated products, and those requiring just-in-time delivery of materials or equipment. Such an industrial park and attendant facilities could ultimately employ a significant number of workers and encourage desirable forms of economic development in eastern Suffolk and throughout the Long Island area.

TABLE 2-43
The Secondary Impact of the Loss of \$100 Million in Grumman Payrolls at Calverton

<i>Industry</i>	<i>Output Decline*</i>	<i>(\$)</i>	<i>Earnings Decline*</i>	<i>(\$)</i>	<i>Employment Decline</i>	<i>(No.)</i>
Construction	\$20,700	(0.0207)	\$950,000	(0.0095)	30	(0.3)
Manufacturing	1,408,600	(1.4086)	46,490,000	(0.4649)	1,180	(11.8)
Transportation, Communications, Utilities	86,400	(0.0864)	2,570,000	(0.0257)	80	(0.8)
Wholesale Trade	69,700	(0.0697)	2,730,000	(0.0273)	90	(0.9)
Retail Trade	76,600	(0.0766)	3,810,000	(0.0381)	250	(2.5)
Finance, Insurance, Real Estate	170,300	(0.1703)	2,580,000	(0.0258)	80	(0.8)
Services	224,400	(0.2244)	10,180,000	(0.1018)	560	(5.6)
Other (Agriculture & Fishing)	3,000	(0.0030)	130,000	(0.0013)	10	(0.1)
Total	2,059,700	(2.0597)	69,440,000	(0.6944)	2,280	(22.8)

Source: LIRPB based on Long Island RIMS II multipliers, Bureau of Economic Analysis, U.S. Commerce Department.

Introduction

This chapter constitutes a reconnaissance survey of environmental resources and regulatory jurisdictions that has been prepared to address two objectives with respect to the potential multi-purpose use of Calverton Airport

- The description of environmental resources and related concerns.
- The assessment of developmental constraints.

Information has been presented in two contexts - the property within the fence line or the *Airport Study Area (ASA)*; and the other covering the entire *Primary Study Area (PSA)*. This survey discusses environmental concerns, data, and information collection needs.

This chapter is contained in five parts;

- ASA Site Conditions In 1930
- Natural Resource Conditions
- Development Constraints Analysis
- Planning Boundaries Descriptions
- Noise Analysis, and Regulatory

Part One - The site conditions in 1930 were evaluated from aerial photographs in order to assess the pre-airport status of the property in contrast with the current development.

Part Two - Natural Resource Conditions include: Topography, Soils, Vegetation Inventory, Surface Waters and Wetlands, Rare and Endangered Species and Significant Habitats, Wildlife Resources and Management Activities, and Hydrogeologic Conditions including Water Table Conditions, Groundwater Flow, Depth to Groundwater, Water Supply and Water Quality

Part Three - The data from the resource conditions review provided the parameters and framework for the constraints analysis which identified those portions of the ASA that could be developed without significant envi-

CHAPTER THREE

Environmental Setting and Developmental Constraints Analysis

ronmental impact, in contrast with those acres that should not be developed because of environmental sensitivity.

Part Four - This part contains a discussion of the various jurisdictional boundaries affecting the airfield relative to environmental regulatory statutes or policies enforced by the federal, state and county health and environmental agencies.

Part Five - The noise analysis includes a review of the AICUZ studies conducted by the Navy, general discussion of noise concerns with comparative data from other locations and studies and its implications to Calverton, and the development of noise profiles based on the development scenarios for Calverton.

PART ONE

Airport Study Area Site Conditions In 1930

Circa 1930 aerial photographs were examined to determine surface cover and site conditions prior to the development of the Calverton airfield in the early 1950s. The following observations were based on this examination.

- The western portion of the study area consisted of relatively undisturbed pine oak forest. This area and its associated freshwater wetlands have remained generally intact to the present day.
- Agricultural activity occurred in 1930 in the area north of North Pond; this area also included an intervening strip of forested land. This area has been disturbed relatively little from subsequent construction activity at the site. A portion of the agricultural acreage was utilized for the southern portion runway 5/23.
- In 1930, the central portion of the airport site consisted of undisturbed woodlands from Swan Pond Road north to Route 25. Several drainage swales were located in this area, trending in a north to south direction. A stream is shown traversing the lower, central portion of the site; it is a tributary to Swan Pond. A large freshwater wetland area is located north of Swan Pond Road. This entire swale/stream/wetland drainage system was extensively altered as a result of cut and fill activity associated with construction of 17,000 feet of runway, as well as construction of the industrial buildings located in the central portion of the study area. A portion of the former freshwater wetland area is now occupied by McKay Lake.
- The three freshwater wetland areas trending southwest to northeast in the central/east portion of the study area are evident on the 1930 aerial photo. Some agricultural activity occurred in the area adjacent to the most southerly of these wetland areas.
- Agricultural fields with intervening woodland acreage were found in the eastern portion of the study area in 1930.
- The 1930 aerial photo also shows the two ponds in the northeastern portion of the study area to be intact and surrounded by woodlands. (Subsequent dumping/land filling activity has significantly reduced the area of the larger pond.)

PART TWO

Natural Resource Conditions

Topography

The Airport Study Area encompasses 2,913 acres within the fence line, and its perimeter is more than 13 miles. The area has a maximum length of about 3.3 miles, and a maximum width of 1.5 miles. The highest elevations are generally found along the northern and western boundaries of the site. The land surface slopes gently to the south towards the Peconic River system. The maximum site elevation, as determined from 1974 Suffolk County Dept. of Public Works topographic maps, is 88 ft. above mean sea level (amsl). The lowest elevation of 32.5 ft. is found in the extreme southeast portion of the study area. Hence, site relief is over 55 ft. Runway elevations vary between 52 and 75 ft. amsl. The elevation of the surface waters in the Peconic River system to the south of the study area ranges from approximately 25 to 35 ft. amsl. With the exception of the immediate shoreline of McKay Lake, the entire study area is located outside of the 100 year floodplain.

Soils

Two of the ten soil associations in Suffolk County are found in the ASA. A soil association is a

...landscape that has a distinctive proportional pattern of soils. It normally consists of one or more major soils and at least one minor soil, and it is named for the major soils. The soils in one association may occur in another, but in a different pattern.

The two are the *Haven-Riverhead Association*, found in the northern part of the study area, and the *Plymouth-Carver Association*, Rolling and Hilly, found in the southern part of the area.

The *Haven-Riverhead Association* is found on outwash plains. It is characteristically nearly level and has short gentle slopes along shallow drainageways. Slopes range from 1

to 12 percent. This association makes up 26 percent of the County. Haven soils make up about 40 percent of the association, and Riverhead soils make up about 30 percent. Minor soils make up the remaining 30 percent. Haven soils are deep, well drained, and medium textured. Minor soils of this association are steeper Carver and Plymouth soils on the sides of drainageways and on the steep sides of kettle holes. The soils of this association have moderate to high available moisture capacities and crops respond well to applications of lime and fertilizer. Drainage is good in those soils, and they can be excavated with ease. In places where the soils have a high water table or are strongly sloping, limitations are more severe for most nonfarm uses.

The *Plymouth-Carver Association*, Rolling and Hilly soils are characteristically strongly sloping to steep with slopes ranging from 8 to 35 percent. This association makes up 19 percent of the County. Plymouth loamy sand soils make up about 45 percent of the association, and Carver and Plymouth sands make up about 30 percent. Minor soils make up the remaining 25 percent. Both Carver and Plymouth soils are deep and excessively drained. Carver and Plymouth sands generally are the steeper soils on ridgetops and the lower part of slopes. The more gently sloping Plymouth loamy sand soils are mainly on the intervening areas. Minor soils are Haven and Riverhead soils that are nearly level and are scattered throughout the association and, in this study area, Berryland soils that have a high water table. The soils of this association are coarse textured and droughty. Permeability is rapid and natural fertility is low to very low. These factors make them very poorly suited or only fairly well suited to most crops commonly grown in the County. Steep slopes on much of the area and difficulty of establishing and maintaining lawns and landscape plantings severely limit those soils for housing development or similar nonfarm uses. Areas of soils that have a high water table severely limit the use of some areas for sewage effluent disposal. Rapid movement of water and wastes from cesspools and septic tanks can contaminate ground-

water supplies beneath the rapidly permeable soils of this association.

The Soil and Floodplain Constraints as shown in Figure 3-1 indicates areas with constraints to development due to soil and surface characteristics, such as slopes, drainage and frequency of flooding.

The area of the 100 year floodplain was determined from the Flood Insurance Rate Map, Town of Riverhead, published by the Federal Emergency Management Agency.

The surface water contribution to the Peconic River is that portion of the Peconic River drainage basin that includes those land surfaces which contribute stormwater runoff directly to the river.

The areas of steep slope were determined by use of soil classification maps, and were confirmed with five-foot contour interval contour maps.¹² The soil types considered all had 8 to 15 percent or 15 to 35 percent slopes and all had erosion hazard classifications of moderate to severe.

The areas marked as intermittent streams have a general north to south trend. The original drainage pattern has been interrupted by the construction of the existing runways.

The areas of wet soil were identified as Berryland Mucky Sand. The soil is characterized as deep, very poorly drained, coarse-textured, strongly to very strongly acid and of low natural fertility.

Vegetation Inventory

The vegetation inventory for upland habitats was compiled from various sources.¹³

The information contained in the reports were field checked and updated on a visit to the Calverton site on September 14, 1992. Recent aerial photos of the airport grounds were also used to update grass areas to indicate old fields in various stages of succession.

From the information compiled, the Natural Resources Map (Figure 3-2) was prepared identifying major forest groups

and upland habitats within the airport study area. The forest groups are presented below.

The upland habitats in the Airport Study Area are described as follows:

1. **Pine/Oak Forest** - As can be seen from the NWIRP Natural Resources map, the major type of vegetation association within the fenced area at the Grumman facility is Pine-Oak forest. This type of woodland is dominated by pitch pine *Pinus rigida* intermixed with black oak *Quercus velutina* and white oak *Quercus alba* and, to a lesser extent, scarlet oak *Quercus coccinea* and black cherry *Prunus serotina* in the canopy. The canopy is usually nearly closed thus leading to reduction of scrub oak *Quercus ilicifolia* in the undergrowth. Also in the undergrowth, black huckleberry *Gaylussacia baccata* and late lowbush blueberry *Vaccinium vacillans* can be found, as well as other species.
2. **Oak Forest** - Some small areas of oak forest can be found north of the runways within the fence line. This type of habitat is dominated by white oak *Quercus alba* and black oak *Quercus velutina*, with some black locust *Robinia Pseudo-acacia* and black cherry *Prunus serotina* intermixed. The understory vegetation is often dominated by weedy species including catbriar *Smilax*, poison ivy *Rhus radicans* Japanese honeysuckle *Lonicera japonicus* and Virginia creeper *Parthenocissus quinquefolia*.
3. **Pitch Pine Forest** - One area to the northwest of the western runway consists predominantly of a pure stand of pitch pine *Pinus rigida*, with sparsely scattered scrub oak *Quercus ilicifolia* and blueberry *Vaccinium vacillans* in the understory.
4. **Mixed Conifers and Deciduous Plantation** - The second largest habitat type within the fence consists of what can be termed as a mixed conifers and deciduous plantation. Approximately 15 years ago this area had been planted to conifers intermixing white pine *Pinus strobus*, short leaf pine *Pinus echinata*, Norway spruce

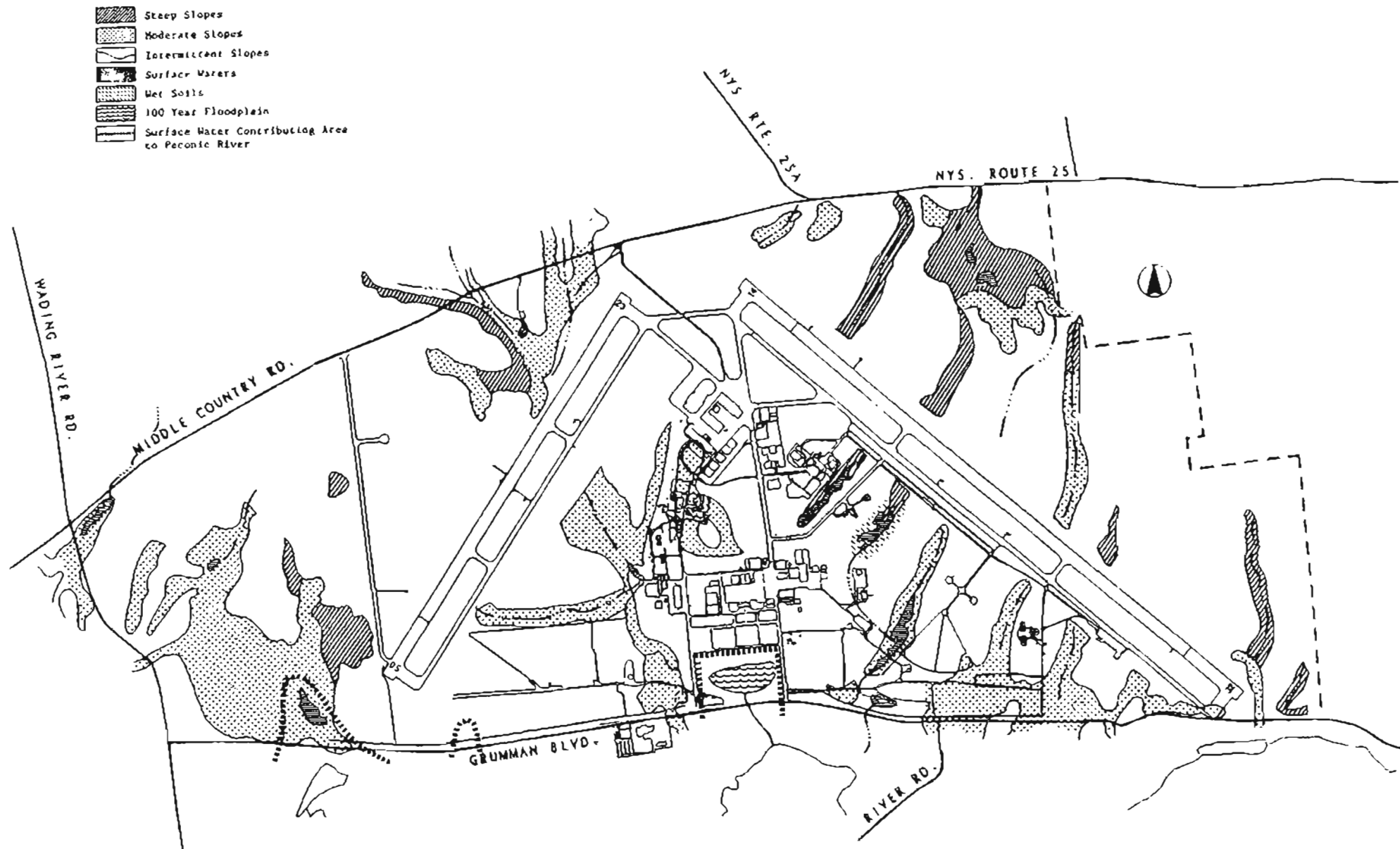


Figure 3-1 ASA Soil and Floodplain Constraints

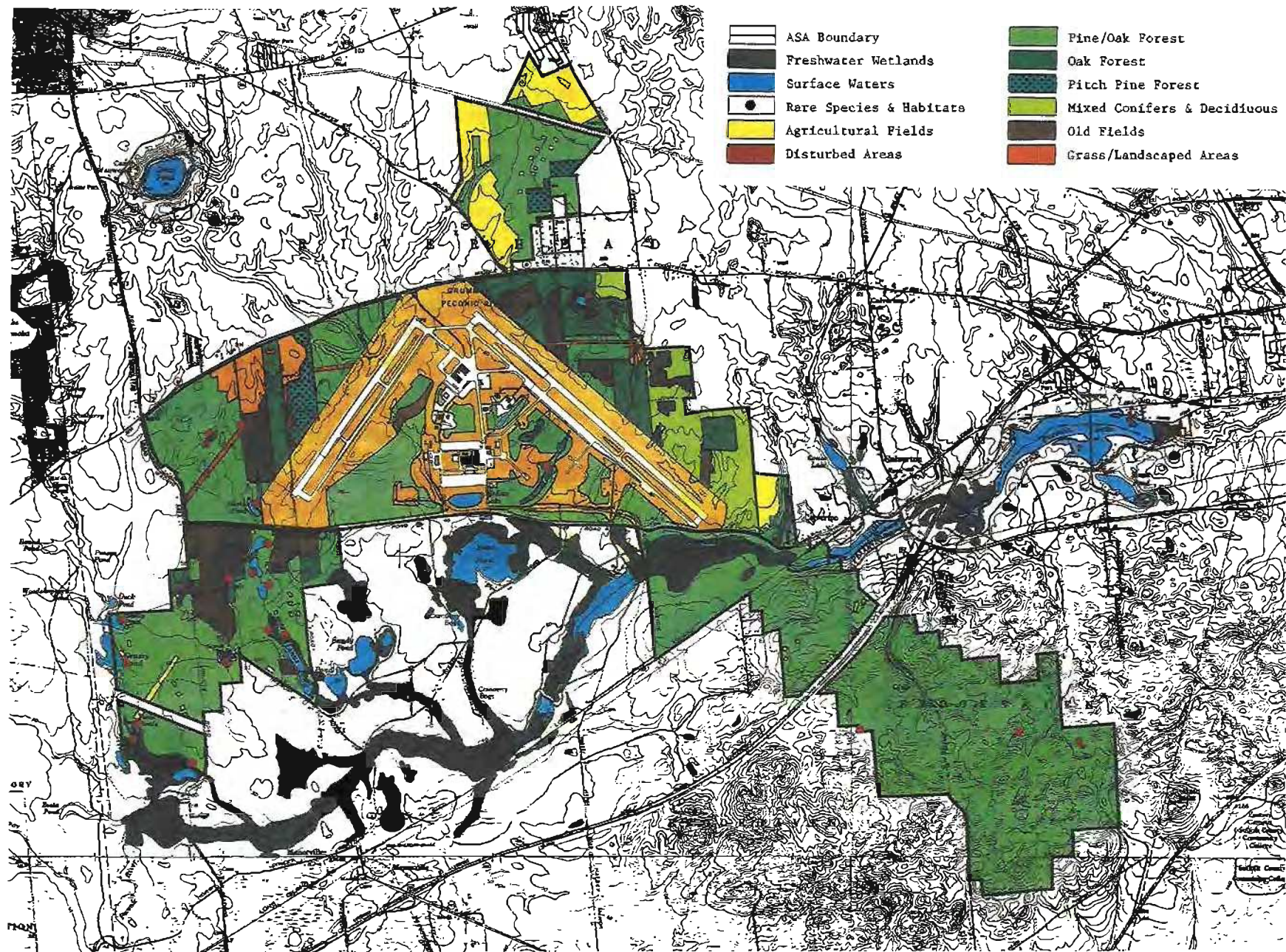


Figure 3-2 ASA Natural Resources

Picea abies and larch *Larix laricina*. Pitch pine *Pinus rigida*, black oak *Quercus velutina*, white oak *Quercus alba* and black cherry *Prunus serotina* can also be found in the canopy. In many areas the pines are so thick that very little is found in the understory. In other areas where the pitch pine and oaks are found, scrub oak *Quercus ilicifolia*, huckleberry *Gaylussacia baccata* and blueberry *Vaccinium vacillans* can be found to some extent in the understory.

5. **Old Fields** - Throughout the site within the fence line are old fields that are in various stages of succession reverting back to woodlands. The various species of grasses and dominant herbs can still be found in these areas together with such trees as pitch pine *Pinus rigida*, red cedar *Juniperus virginiana*, spruce *Picea abies*, short leaf pine *Pinus echinata*, as well as larch *Larix laricina* and, to some extent, young oaks *Quercus*.

6. **Grass Fields and Landscaped Areas** - Along roads and adjacent to the runways, numerous mowed grass field areas can be found which are dominated by native grass species with herbaceous species. These grasslands include little bluestem *Andropogon scoparius*, spike grass *Danthonia spicata* and panic grass *Panicum vargatum*. Dominant herbs include asters *Aster*, false indigo *Baptisia tinctoria*, goldenrod *Solidago* and sweet fern *Comptonia peregrina*. Diversity in this community ranges from very low in areas that are frequently mowed, such as aprons at the site, to very high at less frequently disturbed woodland edges and along pine barrens sand roads.

The predominant vegetation association in the NWIRP buffer zones is a pine-oak forest type of habitat as can be seen on the NWIRP Natural Resources map. In addition to this type of vegetative cover, two small areas of pitch pine forest are located to the north of the Airport Study Area, as well as some substantial agricultural fields.

To the southwest of the Airport Study Area, in addition to the pine-oak forest, some small areas of white pine plantation can be found. Approximately 15 to 40 years ago, sev-

eral areas of white pine *Pinus strobus* were planted for forestry purposes. These areas predominantly contain white pine sometimes mixed with a scattering of pitch pine *Pinus rigida*. Some of these areas have been earmarked for timber harvesting some time in the future as part of the Navy's forestry program. A small area of mixed conifers and deciduous plantation habitat also occurs on the Navy-owned property to the southwest of the airport property. In addition, old fields exist on both the west and east sides of Prestons Pond at the headwaters of the Peconic River. On lands southeast of the fence line, the vegetation association consists primarily of pine-oak forest.

Food plots can be found scattered infrequently throughout all of the areas outside of the fence line. The long range management plan prepared for NWIRP calls for creating open areas within wood stands for the purpose of maintaining or increasing habitat diversity. In such areas, shrubs, grasses, legumes, annual grains, and other plantings that attract wildlife may exist. The NYSDEC is responsible for management of these areas. (See Wildlife Resources and Management Activities section.)

The major association found within the PSA is the outwash plain and morainal pine-oak forest that constitutes the Long Island Pine Barrens. The pine barrens zone, which extends from Hauppauge through the PSA east to Bridgehampton, is interspersed with wetland habitats associated with the Carmans River and Peconic River systems. The pine barrens habitat is generally characterized by very dry conditions — rainfall is usually less than 40" per year — and there is very good sunlight with high ground penetration. The soil is a highly acidic sand and sand-loam mixture from which most nutrients are rapidly leached. In addition, very little humus is produced in the soil due to the high acidity resulting from the tannic acid content of the fallen pine needles and oak leaves. The vegetation in the Long Island Pine Barrens consists mostly of pitch pine, which is dominant, along with white oak, post oak and scarlet oak. According to Cryan,

....The structure of pine barrens vegetation, as well as its species constituents, is very distinctive. Most upland pine barrens areas are known as *shrub savannas* by vegetation

scientists because they consist of dense knee-to-head-high chestnut oak, and smaller shrub species like black huckleberry, lowbush blueberries, sweet fern, winterberry, pine barrens heather, sheep laurel, prairie willow, and bearberry, overtopped by a broken canopy of slender, scraggly pitch pine and small tree-sized oaks. The shrub layer is usually dominant, whereas in a typical eastern deciduous forest, the tree layer predominates, allowing little light to penetrate to the shrub layer, which consequentially is sparse and irregular. The herbaceous or non-woody plant layer of pine barrens areas, incorporated within or beneath the dense shrub layer, contains many unusual and rare species (such as bracken fern, wild indigo, blue lupine, American goat's-rue, narrow-leaved aster, and birdsfoot violet) which can only grow in the open sun-drenched pine barrens vegetation, and which die if shaded by other plants.¹⁴

This type of habitat is fire dependent and, therefore, identified as a fire climax forest. Periodic natural wild fires are required to maintain the Long Island Pine Barrens vegetation.

Most of the plants and animals found in the pine barrens possess one or more characteristics that allow them to survive frequent fires, thus contributing to the perpetuation of the pine-oak ecosystem.

The Pine Bush or Dwarf Pine Plains is an interesting variation of the Pine Barrens found in the PSA. Although nearly identical to the Pine Barrens in the diversity of its flora, this micro-habitat is distinguished by dwarf pitch pines that grow no taller than six or seven feet. The area is probably more xeric than the standard pine barrens, since a smaller proportion of broad leaf oak species in the brush allows better sunlight to ground penetration. The Dwarf Pine Plains covers about 3,000 acres northwest, west and adjacent to the Suffolk County Airport in Westhampton.

North of the hamlet of Riverhead and the Peconic River, the vegetation changes from a pine barrens to an upland deciduous forest association in which oaks dominate the canopy, although American beech can account for more than 20 percent of the canopy. Greller identifies this type of association as oak, beech, mixed dicot forest, noting that sweet birch is a common subcanopy tree along with dogwood, and that the shrub density in these woods is low and the herb layer floristically poor.¹⁵

In the past, farming was an important activity within the PSA; therefore, old field habitats can be found scattered throughout the region wherever agricultural fields have been allowed to lie fallow. The overgrown or old field habitats vary in respect to the dominant type of growth. The herb dominated fields typically contain goldenrods and asters with Queen Anne's lace, yarrow, bush clover, evening-primrose and chicory also present. Various grass species, including little bluestem, may also occur along with big bluestem and fescue. As succession proceeds, the old field habitat is invaded by shrubs including eastern red cedar, northern bayberry, autumn olive, multiflora rose, sumac and raspberry. The shrub layer eventually becomes dominant. In the later stages of succession, trees such as black locusts, red cedar, ailanthus, and grey birch, as well as undergrowth including wild blackberry, poison ivy, raspberry, multiflora rose, catbrier and grape form a first growth woods.

Surface Waters and Wetlands

Freshwater wetlands include fresh surface waters such as rivers, ponds, lakes, and streams, with associated emergent and submergent vegetation as well as bogs, swamps and wet upland woods. Wetland areas were identified in the ASA, within the NWIRP buffer zones, and within the PSA. New York State Freshwater Wetlands Interim Maps identify wetland boundaries.¹⁶

The NYSDEC freshwater wetlands have been ranked into four classes according to the degree of ecological benefit that each wetland type provides; with a Class I wetland supplying the greatest benefits. The degree to which wetlands yield benefits depends upon many factors, including: vegetative cover, ecological associations, special features, hydrological and pollution control features, and distribution and location.

Approximately 57 acres of freshwater wetlands have been identified *within the fence* at Calverton Airport. Of the 57 acres, 42 acres have been defined as Class I wetlands. About 30 acres of the Class I wetlands are part of the Peconic River System. Table 3-1 lists the freshwater wetlands in the ASA.

TABLE 3-1
Freshwater Wetlands Identified within the Airport Study Area

Identification No./Name	Acreage	Classification
W-16 (pond in NW corner)	7	I
W-24 (pond in NE corner)	2	IV
W-25 (Firebreak Pond)	2	I
W-26 (North Ponds)	3	I
W-27 (Runway Ponds)	5	II
W-28 (Runway Ponds)	5	II
p/o R-5 (Peconic River System)*	30	I
Others**	3	
Total	57	

*Includes McKay Lake and one of the three Runway Ponds which are connected by culvert to Swan Pond, all of which are part of the Peconic River System (R-5).

**This includes wetland areas delineated on the U.S. Fish and Wildlife National Wetland Inventory Maps (1980).

p/o = part of

Source: NYSDEC Region I Freshwater Wetlands Interim Maps (July 1990).

McKay Lake, located along the southern boundary of the study area, near the main entrance to the Grumman property, was most probably created at the time the airport was developed. This lake, as well as the three wetlands located northeast of the lake, were all formerly part of a drainage/tributary area connected to Swan Pond. McKay Lake is connected to Swan Pond via a culvert that runs beneath Swan Pond Road which then connects to the Peconic River to the South.

The three Runway Ponds are

.....long, narrow, shallow ponds in outwash valleys. Small woodlots of disturbed pine barrens surround two of the ponds; the third has grassy and heathy fields around it. The ponds are groundwater-fed and are surrounded by paved runways, taxiways and roads..... They are eutrophic and receive substantial runoff.....¹⁷

There are two other freshwater wetlands that are groundwater-fed located on the western portion of the fenced area. One is called *Firebreak Pond* (2 acres) and the other is called *North Pond* (3 acres). They are both Class I wetlands. Firebreak Pond consists of

...two small, oval, shallow thermokarst ponds north of a firebreak in disturbed pine barrens.¹⁸

A thermokarst pond is an irregularly shaped pond owing to collapses of the surface induced by the thawing of ground-ice masses during glacial retreats (periglacial environments). North Pond is

....a large shallow thermokarst pond, surrounded by a swamp fringe and disturbed, fire-suppressed pine barrens. Pond bottom is covered with grasses, sedges, and rooted aquatics.¹⁹

In the northeast corner there exists a freshwater wetland consisting of two large, kettlehole ponds which lie in a steep-sloped depression. Disturbance through previous landfilling activities of the northernmost pond is evident; however, the smaller adjoining pond to the south appears undisturbed. The northernmost pond is vegetated with shrubs and small trees in its center. It has been identified as a Class IV wetland, which is maintained by surface drainage from the adjacent road.

Approximately 232 acres of freshwater wetlands have been identified within the NWIRP buffer zones. A significant portion of these wetlands, approximately 220 acres immediately adjacent to the Peconic River, has been defined by NYSDEC as Class I wetlands. Table 3-2 lists the freshwater wetlands located within the NWIRP buffer zones. These wetlands include portions of two important tributaries to the Peconic River: Prestons Pond/Forest Pond/Linus Pond tributary and Sandy Pond/Grassy Pond/Twin Pond/Jones Pond tributary. Also included within the NWIRP buffer zones is a one and one-quarter mile portion of the Peconic River proper, and its associated Class I wetlands. It includes that portion of the river between Connecticut Avenue to one-half mile west of Edwards Avenue.

All the tributary ponds listed above have been identified as Coastal Plain Pond Shore habitats except for Jones Pond which has been classified as a Pine Barrens Shrub Swamp habitat. The New York State Natural Heritage Program (NYSNHP) has described the Coastal Plain Pond Shore habitat as

TABLE 3-2
Freshwater Wetlands Identified within the NWIRP Buffer Zones

Identification No./Name	Acreage	Classification
W-4	4	I
p/o W-5	7	I
p/o R-5 (Peconic River System)*	209	I
R-7	1	III
R-55	1	III
R-56	9	IV
Others**		
Total	232	

*Includes part of the Linus Pond tributary and part of the Sandy Pond/Grassy Pond tributary to the Peconic River, as well as a section of Peconic River proper east from Connecticut Avenue to approximately 1/2 mile west of Edwards Avenue.

**This includes additional wetland areas delineated on the US Wild and Wildlife National Wetland Inventory Maps (1980).

p/o = part of

Source: NYSDEC Region I Freshwater Wetlands Interim Maps (July 1990).

.... a gently sloping shore of a coastal plain pond with seasonally and annually fluctuating water levels. The substrate is sandy, gravelly, or mucky. Vegetative cover varies with the water levels. In dry years when water levels are low and the substrate is exposed, there is a dense growth of annual sedges and grasses. In wet years when the water level is high and the substrate is flooded, vegetation is sparse, and only a few emergents and floating-leaved aquatics are apparent. The vegetation of this pond shore community can change dramatically from one year to the next depending on fluctuations in groundwater levels.²⁰

The Pine Barrens Shrub Swamp is described as

.... a shrub-dominated wetland that occurs in shallow depressions in the coastal plain, often as a transition zone between a coastal plain pond shore and either pitch pine-scrub oak barrens or pitch pine-oak forest.²¹

Three other sites of freshwater wetlands are located in the NWIRP buffer zones. The *Sandpit Ponds* are found on the south side of Manor Road east of Schultz Road. It has been described as

....an abandoned sand pit with four groundwater-connected ponds in deep spots.²²

This wetland has been identified as a Class I wetland which is four acres in size.

The *Line Road Ponds* are situated east of Line Road and north of Fox Pond and Sandy Pond. They have been described as

....a complex of three coastal plain ponds and a shrubby, boggy Red Maple swamp surrounded by pine-oak woods.²³

Approximately 7 acres of this Class I wetland are within the NWIRP buffer zones.

The *Bald Hill Ponds* are located east of Toppings Path along the easternmost boundary of the NWIRP buffer zones. They have been described as

....three separate, irregular, swampy kettle depressions deep in the hills of an oak-pine forest with a perched water table on clay lenses.²⁴

Total acreage of these wetlands is 3 acres; they are described by NYSDEC as a Class III or IV wetland.

The predominant surface waters and freshwater wetlands within the Primary Study Area include the Peconic River and Carmans River systems. The Peconic River, including its tributaries, is 30 miles long and is the longest river on Long Island as well as the largest Pine Barrens River in New York State. Throughout the river's length from its headwaters west of William Floyd Parkway in Ridge to downtown Riverhead, numerous freshwater wetlands including an abundance of tributary streams, lakes and ponds, can be found. Its 2,083 acres are ranked Class I wetlands. The various types of freshwater wetlands are numerous along this corridor including: Maple Swamps, Atlantic White Cedar Swamps, Kettlehole Swamps, Leatherleaf bogs, Cranberry Bogs, Coastal Plain Ponds, Coastal Plain Pond Shores, Pine Barrens Shrub Swamps, and Coastal Plain Poor Fen.

Suffolk County has issued a license to SUNY at Stony Brook's Department of Ecology and Evolution for the operation and maintenance of a biological field research station at Swan Pond in Robert Cushman Murphy County Park, which is located adjacent to the southern boundary of the Airport Study Area and includes land on the north and south sides

of River Road. Graduate level research on plant/parasite relationships in Swan Pond is underway, as well as preparation of plant community inventories and maps for Robert Cushman Murphy Park and Calverton Ponds.

The Carmans River and its associated wetland is another significant area of freshwater wetlands. The river originates in Middle Island and extends through the southeast portion of the Primary Study Area until it empties into Great South Bay. It yields a total of 862 acres. This system is also ranked as a Class I wetland.

Numerous smaller wetlands can also be found associated with several lakes and ponds in the Middle Island area. The majority of these are Class II wetlands. Other freshwater wetlands within the Primary Study Area include a cluster of wetlands in the vicinity of Manorville/South Manor, as well as the Flanders area.

In addition, the many smaller freshwater stream systems that flow south into Moriches Bay and their associated fringe wetlands are located along the southern portion of the Primary Study Area.

New York State Tidal Wetlands Maps obtained from NYSDEC were utilized to identify tidal wetland boundaries. Further wetland delineation was provided by the U.S. Fish and Wildlife Service, Dept. of the Interior National Wetland Inventory Maps.²⁶

Along the Long Island Sound shoreline, two large tidal wetland areas are located in Wading River and Baiting Hollow. Extensive tidal wetlands are also located along Flanders Bay and numerous fringe tidal wetlands exist up to the tidal limits of many small streams that flow south into Moriches Bay.

The Brown Tide

The Peconic system is an interconnected series of shallow coastal embayments that intermittently have been plagued with an unusually dense and persistent algal bloom (the *Brown Tide*) since 1985. A Brown Tide Comprehensive Assessment and Management Program (BTCAMP) to study the sources and impacts of the algal bloom. BTCAMP is a multi-year study which utilizes a two-prong ap-

proach, dealing specifically with the Brown Tide problem and more generally with conventional water quality concerns in the Peconic Estuary watershed.

The recommendations of BTCAMP that relate to development activities within the surface water and groundwater contributing areas of the Peconic River watershed include:

Marine Surface Water Quality Protection and Mitigation

- Prohibition of incremental point and non-point source pollution and substantial groundwater degradation (no net increase in nitrogen loading).
- Attainment of a nitrogen guideline of 0.5 mg/l through pollution abatement in the tidal portions of the Peconic River

Rare and Endangered Species and Significant Habitats

An inventory of endangered, threatened, special concern, and rare species was prepared utilizing data collected by the NYSDEC and The Nature Conservancy for the NYSNHA. It concentrates on plant and animal species considered rare, threatened, or endangered, plus terrestrial and aquatic habitats and other unique natural habitat features.

Sites identified as critical elements have been identified on Figure 3-2.

A total of six sites were identified within the fenced area of the Grumman facility by the NYSNHP as rare species, endangered species or species of special concern. Four of these sites were habitat to the endangered tiger salamander. In fact, one of the wetland sites in the Airport Study Area has one of the largest tiger salamander populations known on Long Island. Other animals identified include the spotted salamander and the coastal barrens buckmoth both of which have been given the status of special concern. Three rare plants were also identified within the Airport Study Area including the Nuttall's lobelia, rose coreopsis, and slender pinweed.

A total of 30 endangered, threatened, special concern or rare animals and plants were identified within the buffer zones. Table 3-3 lists those species and habitats found in this area, many of which are located within freshwater wetland

TABLE 3-3
List of New York State Natural Heritage Program Rare Animals
and Plants Identified within the NWIRP Buffer Zones
July 1992

Habitat: coastal plain pond shore

<i>Species:</i>	<i>NYS Legal Status:</i>
mountain bellwort	E
tiger salamander	E
Nuttall's lobelia	R
eastern bluebird	P-SC
reticulated nutrush	R
rose coreopsis	R
Carolina redroot	T
Drowned horned rush	E
comb-leaved mermaid-weed	R
ludwigia	R
short-beaked bald-rush	R
Martha spotted skimmer	U
painted bluet	U
quill-leaf arrowhead	E
long-beaked bald-rush	R
rush bladderwort	R
hiddenfruit bladderwort	U
banded sunfish	U-SC
small floating bladderwort	R
fibrous bladderwort	R
coastal barrens buckmoth	U-SC
knotted spikerush	T
two-flowered bladderwort	R
three-ribbed spikerush	T
grasshopper sparrow	P-SC
slender crabgrass	R
round-necked damselfly	U
long-tubercled spikerush	T
coppery St. Johns-wort	E
herodius underwing	U

Key: NY State Legal Status

E = Endangered

T = Threatened

SC = Special Concern

P-SC = Protected-special concern

U-SC = Unprotected-special concern

R = Rare

U = Unprotected

environments described in the previous section entitled Surface Waters and Wetlands.

In addition, Significant Habitat Reports were obtained from the NYSDEC Wildlife Resources Center that include portions of their habitat boundaries within the NWIRP buffer zones.²⁷ The southeast portion of the NWIRP buffer zone includes a portion of one of the very largest tracts of natural pine barrens on the Ronkonkoma moraine remaining on Long Island. The southwestern portions of the NWIRP buffer zone includes a large portion of the Linus Pond tributary complex as well as a portion of the Peconic River itself east of Connecticut Avenue, both of which are habitat to an extensive number of rare and endangered plant species.

According to The Nature Conservancy,

...more endangered species live here (the Peconic River headwaters), in fact, than anywhere else in the State of New York, and nearly all depend for their existence on the equally fragile coastal plain ponds that lie to the south of the naval airfield.²⁸

Most recently, Linus Pond was the focus of recent research which indicated,

.....that the coastal pond shore plant community is integrally connected to the environment which surrounds it. Water-level fluctuations are one major factor maintaining high diversity and controlling species composition along the pond shore. The greatest diversity and density of plants were observed to occur under non-flooded conditions. A second key factor was nutrient availability wherein high diversity pond shore communities of rosette and carnivorous species are maintained in part by the low-nutrient conditions in these coastal pond shores. The long-term fluctuation periods permit plant species to differ in their abilities to germinate and grow under flooded and non-flooded soil conditions, thus increasing the diversity of plant species to include carnivorous plants and small-statured, slow growing rosette species and restricting woody upland shrubs infiltration into these fringe areas. It was concluded that changes in long-term water level fluctuation such as damming of ponds, or lowering the water table through over-withdrawal of groundwater, will affect these rare plant communities as well as increases in nutrients through anthropogenic activities.²⁹

- The Nature Conservancy has informed the LIRPB staff that pond shore plants are much more sensitive to nutrients than are people. Even if groundwater nutrient concentrations were kept below the EPA standard for drinking water, pond shore plants could be drastically affected. (Animals and insects also could be affected by increased nutrient levels, either directly or indirectly due to changes in the plant community.)
- Phosphorus appears to be the limiting nutrient in Long Island coastal plains ponds, although this is not yet confirmed. Groundwater may be a major source of phosphorus for most ponds and lakes. Ambient nutrient concentrations in groundwater supplying coastal plain ponds in the Calverton and Flanders regions are very low. Even limited development upgradient from the ponds could potentially add enough nutrients to the groundwater to raise levels many-fold, with resultant adverse effects on the pond biota.
- Hence, the Nature Conservancy has recommended that quantifiable standards be established to ensure the long-term protection of the rare species and natural communities found in the vicinity of the Calverton NWIRP. It believes that the present low levels of nutrients and the historical levels of groundwater should be maintained.

Hundreds of endangered, threatened, special concern and rare species were identified by the NYSNHP in the PSA. The largest concentrations occurred in the Peconic River and associated wetland system. Other areas where endangered and threatened species were identified were in the vicinity of Lake Panamoka, Wading River Marsh, Carmans River, Manorville, Middle Island, the Westhampton Dwarf Pine Plains and wetland areas adjacent to a number of small streams that flow south into Moriches Bay. A composite map of the jurisdictions that affect the ASA is shown on Figure 3-3.

Wildlife Resources and Management Activities

WHITE-TAILED DEER IN THE AIRPORT STUDY AREA - Lack of sport hunting, high birth rate, freedom from predation, limited human activity and a large source of nutritious forage in the grassy runway clear zones - all of these factors - have contributed to the large size of the white-tailed deer herd resident within the Airport Study Area. Deer that venture

onto runways pose a hazard to aircraft traffic at Calverton. The deer herd has also adversely impacted other natural resources. Past efforts to reduce the deer-aircraft strike hazard have included removal of deer under a New York State DEC depredation permit.³⁰ Another approach to mitigate this hazard consisted of the installation of 21,000 feet of electrified deer fence that was designed to prevent or reduce animal incursion onto the runways and into the actively used portion of the site.

A field observation study was conducted in the summer of 1987 to estimate the deer population at the airport, determine the health of the herd and assess effectiveness of the electrified fence which was installed in March 1987.³¹

NYSDEC estimates that from 300 - 500 deer are resident within the fenced area. Another source estimated the deer population within the fence at Grumman to be 600 - 700 deer.³² From a wildlife conservation perspective, there are too many deer in the Airport Study Area; this is evident from the widespread overbrowsing that is occurring.³³ Understory vegetation has been stripped away in wooded areas and old fields up to an elevation of 5 to 6 feet. Many preferred forage plant species are either absent or badly damaged. Overbrowsing has reduced vegetative diversity, forest regenerative capabilities, and increased soil erosion; this degradation also adversely impacts other wildlife species. In short, deer density in the Airport Study Area exceeds the habitat carrying capacity.

AVIAN SPECIES IN THE AIRPORT STUDY AREA - Gulls, waterfowl, and other bird populations are of concern for airport operations, and various techniques have been used to decrease the likelihood of bird/aircraft collisions that can cause damage to aircraft or injury to occupants. Managing airfield turf in the clear zones adjacent to runways is a technique utilized to minimize the bird/aircraft strike hazard. Grasslands adjacent to runways are maintained by mowing so that grass height is kept in the range of 7 to 14 inches. Grass within this height range tend to have low nutritional value for birds and are less of an attractant. Grass lengths in this range also discourage flocking species from entering airfield areas, because reduced visibility disrupts

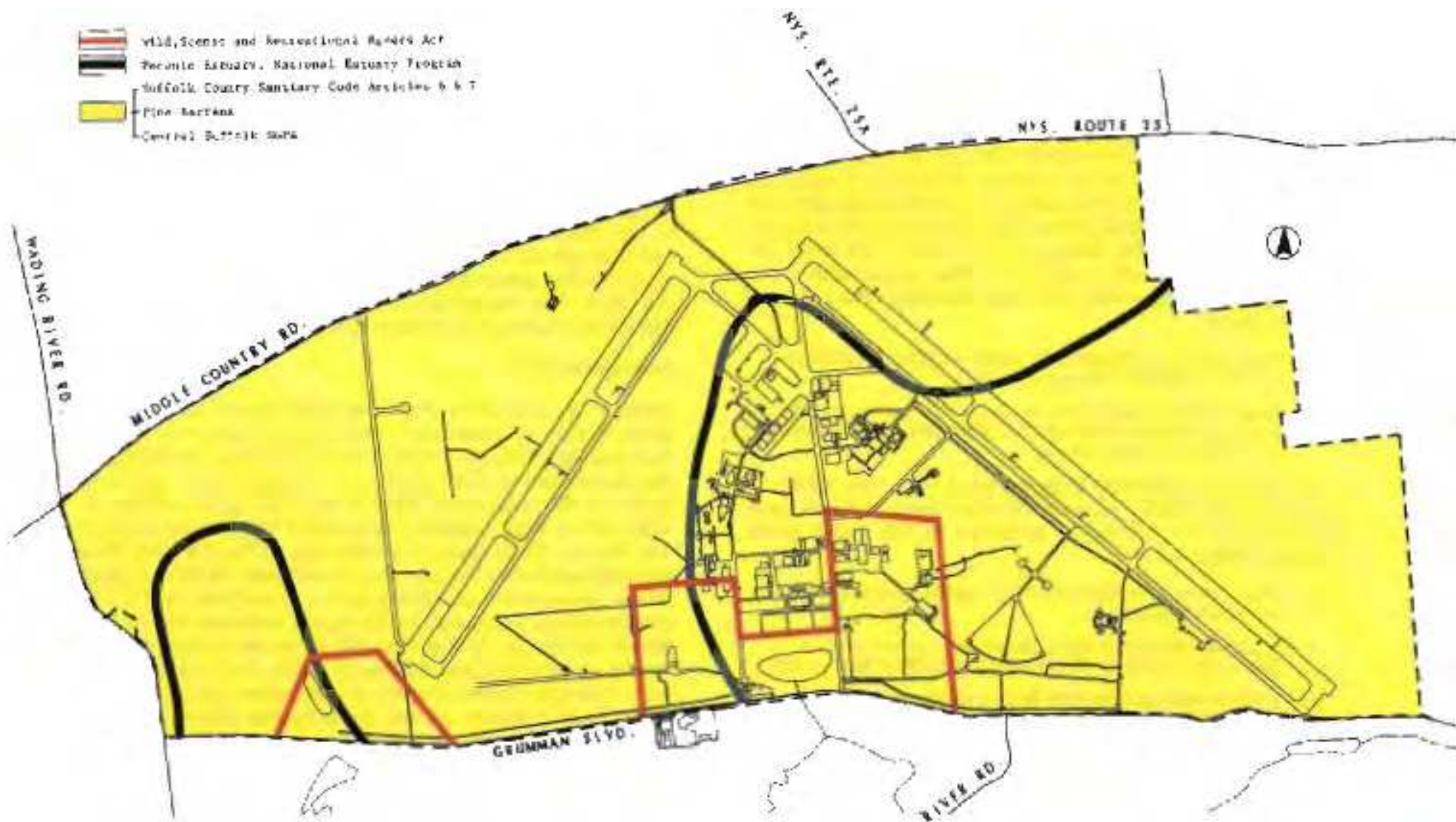


Figure 3-3 ASA Regulatory Boundaries Composite

interflock communications and also prevents predator detection. Grasses that are allowed to grow in excess of 14 inches tend to attract rodents, which in turn attracts raptors. No fertilizer is used in the clear zones adjacent to the runways at Calverton.

FISH AND WILDLIFE MANAGEMENT ACTIVITIES - Public access to NWIRP buffer zones for various recreational uses has been provided since 1965 under cooperative agreements executed by the United States Navy, Department of the Interior (Fish and Wildlife Service) and NYSDEC. The latest cooperative agreement provides for the preparation of a long range management plan that addresses the following primary goals:

- to protect and develop fish and wildlife resources located at NWIRP, Calverton, and
- to provide for the continued utilization of this area for hunting, fishing, trapping and other resource-based outdoor recreational pursuits.

The *Long Range Wildlife Management Plan 1985-1994* prepared by the NYSDEC pursuant to the agreement describes the management activities targeted to the buffer zones that are designed to

- increase habitat diversity (e.g., create openings within wooded stands),
- improve habitat for key species (e.g., plant annual grains as food for quail, pheasant and other seed eaters),
- and provide access sites (e.g., parking areas) and facilities for special uses (e.g., designated trails for motorcycle use).³⁵

Hydrogeology

The boundaries of the PSA encompass regions of deep aquifer recharge on the north and south sides of the groundwater divide which traverses central Brookhaven; and on both sides of the North and South Fork divides, which extend east of the headwaters of the Peconic River.³⁶ Figure 3-4 depicts the PSA groundwater resources.

Water Table Conditions

The March 1991 water table map of Suffolk County prepared by the Suffolk County Dept. of Health Services indicates that upper glacial aquifer water table elevation ranges from 44 ft. amsl in the western portion of the Airport Study Area to 32 ft. amsl in the eastern portion. These elevations are representative of recent historical highs in water table elevations. Groundwater fed surface waters located in the study area have water surface elevations ranging from about 35 to 44 ft. amsl. The surface waterbody located in the extreme northwest corner of the study area is perched. Site inspection revealed that this location receives stormwater runoff flows from Route 25.

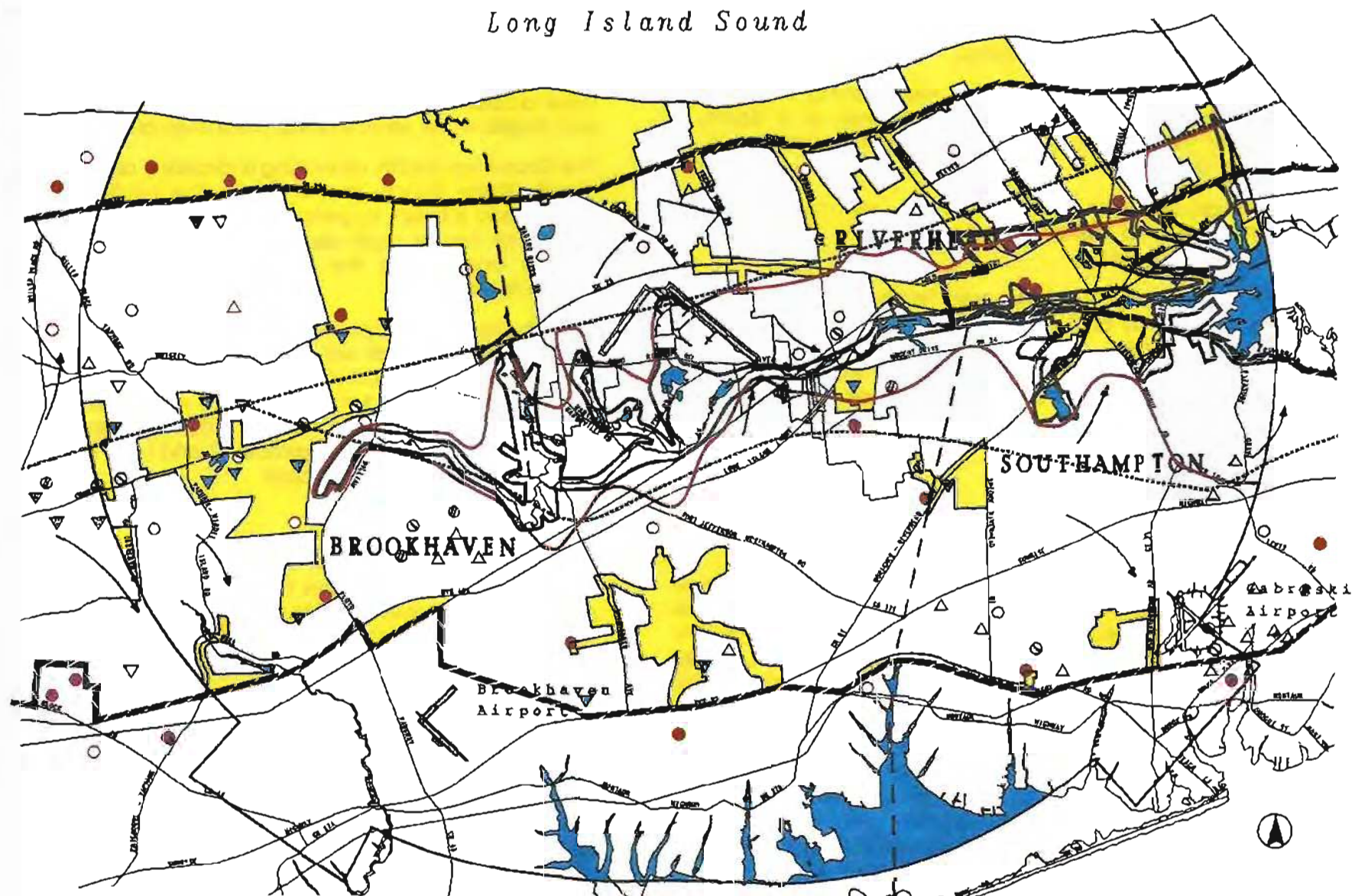
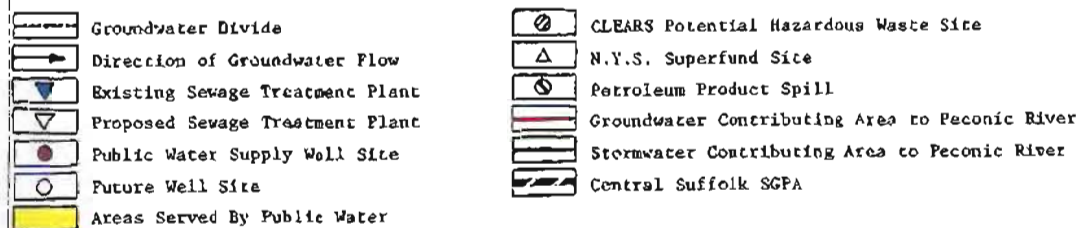
Groundwater Flow

Shallow groundwater flow velocities within the Primary Study Area are generally in the range of one-half to one foot per day. The directions of horizontal flow, as shown on the Groundwater Resources map, are primarily north and south on the respective sides of the main groundwater divide, with a slight easterly component throughout much of the Primary Study Area. The influence of the Peconic River extends westward just beyond Brookhaven National Laboratory, where the main divide splits into northern and southern branches. Recharge in the region between the divides either discharges to the Peconic River as shallow flow, or travels downward and eastward within the Magothy. The area that contributes shallow groundwater flow to the Peconic River is shown on the groundwater Resources map. The northern branch of the groundwater divide traverses the northern half of the Airport Study Area, and approximately bisects the North Fork out to Mattituck Inlet. The southern divide generally follows the topographic high formed by the Ronkonkoma moraine.

Inferred groundwater flow directions at several sampling locations in the Airport Study Area are shown on Figure 3-4.

Depth to Groundwater

Areas where there is a shallow depth to groundwater impose a severe constraint to development activity. Depth to



groundwater is defined as the difference between the elevation of the land surface and the elevation of the groundwater table. Shallow depths to groundwater interfere with building and construction practices, laying of pipes and paving, and are also subject to groundwater flooding and septic system failure. Septic system leaching pools and sewage disposal beds should not be located in areas where depth to groundwater is shallow.

Areas within the Airport Study Area having a depth to groundwater of less than 5 feet, as well as a depth of greater than 5 feet but less than 10 feet, are shown on Figure 3-5.

High groundwater table conditions are most prevalent within the area currently being utilized by Grumman between the runways.

The western portion of the area has two primary corridors beyond runway 5/23 where depth to groundwater poses a severe constraint to development. The eastern portion is, for the most part, free of this constraint, with the exception of the area close to the Peconic River, as well as the area that encompasses the two small ponds in the northeast corner.

Water Supply

Groundwater serves as the source of drinking water for all residing in the PSA. Six community water suppliers provide public water to roughly three fourths of the residential, business, industrial and institutional users in the Central Suffolk SGPA,³⁷ with the Suffolk County Water Authority (SCWA) serving approximately 75 percent of those on public water.³⁸ Over 80 percent of the 20 mgd withdrawn from the glacial aquifer as of 1987 represents approximately 20 percent of the installed capacity of the wells.

The Grumman facility served workers with potable water from three production wells located in a line approximately 2,500 to 2,750 feet north of the south gate, approximately 500 feet west of the roadway. Both well #2 and well #3 were removed from service in 1991 because of volatile organic contamination.³⁹

The nearest private wells to the Grumman facility are located 0.3 miles south, 0.7 miles east, 0.25 miles north, and 0.25 miles west of the facility. The Shorewood Water Company is in the process of connecting existing residential development to the west and northwest in Ridge and surrounding Lake Panamoka to its water supply system. The Shorewood Water Company will soon be purchased and operated by the Suffolk County Water Authority. Similarly, residences in areas north of the Grumman facility will soon have access to public water from the Riverhead Water District. Public water service areas are shown on Figure 3-4.

The Grumman facility as existing is classified as a Non-community Water Supply and is under the jurisdiction of the SCDHS and subject to periodic inspections by the department. The facility must also submit periodic water quality sample analyses to the Suffolk County Department of Health Services.

Plans have been proposed to install an activated carbon filter at the site which will be sized to accommodate one well. This filter is expected to be on line prior to the summer of 1993. In addition, future long term plans call for an air stripper to be installed at the site with the proposed activated carbon filter to be maintained and used as a polishing filter following the air stripper.

Groundwater Quality

Groundwater quality within the PSA is generally excellent; however, industrial activities have impacted the shallower portions of the aquifer system in some regions, including the more densely developed, unsewered areas in the westernmost portion of the PSA, and agricultural areas of Riverhead.

All the glacial and shallow Magothy wells at SCWA William Floyd Parkway in Upton and SCWA Bailey Road on the divide in Middle Island have water quality close to pristine. Similar pristine water quality is found in the two deep (240-300 ft.) glacial wells at SCWA Moriches-Riverhead Road near the South Fork divide on the Brookhaven-/Southampton border, while the three shallow (70-160 ft.) glacial wells at SCWA Old Country Road in Westhampton have shown only the slightest elevations of nitrate. Not all

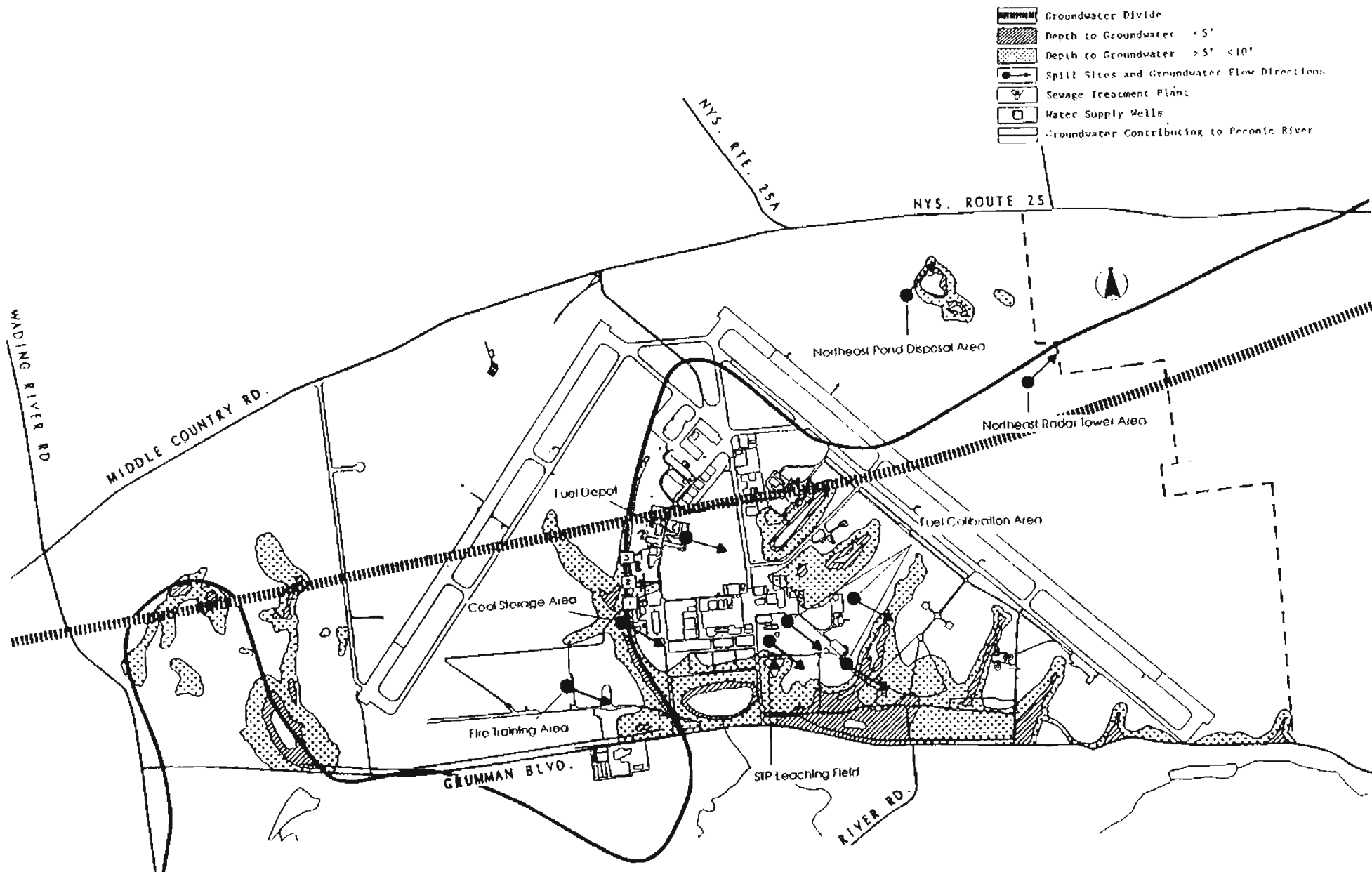


Figure 3-5 ASA Groundwater Characteristics

public supply wells in the central and eastern portions of the primary study area are pristine, however, as evidenced by the Shorewood Water Company's Bridgewater Drive well field, where one of the shallow (140 ft.) glacial wells has had intermittent problems with nitrates and chlorides. In addition, the two 160 ft. glacial wells at SCWA Country Club Road in Manorville have nitrates in the 3-4 ppm range and elevated sulfates, most probably related to existing golf course and past farming activities.

Aircraft assembly and testing activities since the 1950s has had an impact on groundwater quality in the Airport Study Area. The U.S. Navy is conducting a *Navy Installation Restoration Program* (NIRP) at NWIRP, Calverton that is designed to investigate past hazardous materials handling and disposal practices. The goal is to identify and remediate any environmental problems that may have resulted from these past practices.

The final *Site Investigation Report* prepared under the NIRP program identified four sites within the Airport Study Area where groundwater is known to have been impacted.⁴⁰ These sites are shown on the Groundwater Characteristics Map; are the

- Northeast Pond Disposal Area,
- the Fire Training Area,
- the Fuel Calibration Area, and
- the Fuel Depot.

Three other areas, also shown on the Groundwater Characteristics Map, are worth mentioning:

- the former Coal Storage Area,
- the former STP Leaching Field, and
- the Northeast Radar Tower Area.

Brown Tide Comprehensive Assessment and Management Program and Peconic River Water Quality

The Peconic system is an interconnected series of shallow coastal embayments at the eastern end that has been intermittently plagued with an unusually dense and persistent algal bloom (the "Brown Tide") since 1985. Because of the devastating impacts of this bloom on the estuarine resources of the Peconic system, the Suffolk County Department of Health Services (SCDHS) initiated the Brown Tide Comprehensive Assessment and Management Program (BTCAMP) in 1988. The final project report is expected to be published in 1993.

BTCAMP is a multi-year study which provided for a comprehensive program of specialized research activities, extensive bay monitoring, management and evaluation of data (e.g., land use, sources of contamination, groundwater), and state-of-the-art mathematical, computer modelling. The study has utilized a two-prong approach, dealing specifically with the Brown Tide problem and more generally with conventional water quality concerns in the Peconic Estuary watershed.

A detailed investigation of the Peconic River was an integral part of BTCAMP, since the Peconic River is the single largest surface water freshwater input to the Peconic Estuary system. This section describes the preliminary recommendations of BTCAMP that relate to development activities within the surface water and groundwater contributing areas of the Peconic River watershed.

Marine Surface Water Quality Protection and Mitigation

- i Incremental point and non-point source pollution and substantial groundwater degradation should be prohibited in the poorly flushed and environmentally stressed tidal portions of the Peconic River and western Flanders Bay areas ("no net increase of nitrogen loading").
- ii As a long range goal, pollution abatement should occur so that the nitrogen guideline of 0.5 mg/l can be at-

tained in the tidal portions of the Peconic River and Flanders Bay.

Sewage Treatment Plants

- iii. In relation to sewage treatment plant expansion, no net increase in quantities of nitrogen discharged to surface waters should be allowed from Grumman, Brookhaven National Lab, and Riverhead STPs.
- iv. In general, the construction of additional groundwater-discharging sewage treatment plants in the groundwater-contributing area to the Peconic River is contrary to the recommended large-lot zoning policy, which is designed to prevent substantial groundwater degradation for surface water protection purposes. No new groundwater-discharging treatment facility should be considered unless it replaces and upgrades an older facility. However, in special circumstances, groundwater-discharging sewage treatment plants may be considered, subject to the following conditions:
 - a.) Best available technology is utilized (e.g., denitrification to 4 mg/l);
 - b.) The proposed project is associated with significant groundwater, natural resources, and/or surface water quality benefits; and
 - c.) Additional environmental analysis and/or modeling indicate that the adverse impacts on the Peconic River system will be negligible.

Peconic River Land Use

- v. Developable residential land in the Peconic River corridor should be upzoned to a minimum of two acres per unit. Additional natural resource protection could be attained by even more stringent land use controls, such as three to five acre zoning.
- vi. Commercial, industrial, and institutional land uses should be controlled so that the impact on groundwater with respect to nitrogen contribution is comparable to that of two-acre residential zoning.
- vii. Zoning controls should be implemented in conjunction with other land use management techniques, including

cluster development, transfer of development rights, and programs related to land preservation, acquisition, and enhancement.

- viii. In addition to the land use controls noted above, Peconic River development plans should be reviewed utilizing the strictest practicable standards, which should include the requiring of open space dedications, maximum practicable setbacks from the river, and natural landscaping techniques to minimize fertilizer use.
- ix. On a system-wide basis, any action which would result in a substantial increase in stormwater runoff coliform loading to the Peconic Estuary system should be strictly prohibited.
- x. Stormwater runoff remediation efforts should be undertaken on a site-specific basis pursuant to localized studies which demonstrate technological, economic, and environmental feasibility.
- xi. Proposals for new development within the stormwater runoff-contributing area to the Peconic Estuary system should be reviewed under the strictest scrutiny. In addition to on-site stormwater runoff containment requirements, vegetative buffers and sediment and process, with enforcement through the issuance and revocation of permits.
- xii. With respect to sources such as domestic animal waste and fertilizers, best management practices and public awareness should be promoted.

Groundwater

(in addition to Peconic River Land Use recommendations)

- xiii. Monitoring programs and the study of surface water impacts of groundwater should be continued, especially with respect to areas of known contamination.
- xiv. Best management practices, such as low-maintenance lawns, slow-release nitrogen fertilizers, modification of fertilizer application rates, and sanitary system

maintenance should be promoted through public education.

- xv. Additional controls, such as fertilizer use restrictions, should be promoted in the Peconic River watershed.

Hazardous Materials and Sediments

- xvi. Groundwater monitoring programs at Grumman, Brookhaven National Laboratory, and other sites of present and historical hazardous material discharges should be continued. Where appropriate, monitoring and remedial investigations of hazardous material-contaminated sites should incorporate surface water and sediment monitoring with full consideration of surface water impacts incorporated in management decisions.
- xvii. The relatively small store of data regarding hazardous materials impacts on surface waters should be expanded.
- xviii. Sediment flux is a major problem with respect to nutrient contribution in the eastern Peconic River and Flanders Bay areas, and requires further investigation to improve documentation and characterize the dynamics of the relationship between pollution contribution and sediment flux. Given the excellent water quality in the Peconic River, sediment flux of nitrogen in the freshwater portion of the Peconic River system does not appear to be a significant source. However, consideration of sediments in the freshwater portions of the river should be incorporated in the development of general toxic material characterization and management plan.

The Brown Tide Comprehensive Assessment and Management Program has set forth a number of findings, conclusions, and recommendations which have relevance with respect to potential airport development. A detailed examination of these issues is not within the scope of this fea-

sibility study. However, it is useful at this point to identify the major areas of concern with respect to BTCAMP. It is also important to note that many of the areas which are recommended by BTCAMP for further research, monitoring, and management (e.g., sediment flux, hazardous material contamination, surface water quality) are proposed as future efforts under the National Estuary Program Peconic Estuary Nomination. Other areas, such as groundwater investigations at Grumman and Brookhaven National Laboratory, are ongoing efforts independent of BTCAMP or this feasibility study.

The areas of concern in reviewing airport development alternatives with respect to surface water protection are listed as follows:

- Compliance with Suffolk County Sanitary Code regulations regarding groundwater (and dependent surface water) protection, including Article 6 (Realty Subdivisions and Developments), Article 7 (Water Pollution Control), and Article 12 (Toxic and Hazardous Materials Storage and Handling Controls).
- Sewage treatment and discharge impacts on groundwater and/or Peconic River.
- Water supply impacts on groundwater, wetlands, and surface water systems.
- Impacts of hazardous material use, storage and disposal; industrial waste pretreatment processes.
- Design of adequate stormwater runoff control systems.
- Impacts of fertilizers, herbicides, and other chemicals on groundwater and/or Peconic River; maximizing of landscaping techniques to minimize fertilizer use.
- Establishment of vegetative buffers and setbacks from wetlands, the river system, and other sensitive natural resources related to the river's ecosystem to maximize protection of the ecosystem from pollutants.

PART THREE

Developmental Constraints Analysis

An analysis of developmental constraints was conducted for the Airport Study Area for the purpose of locating those sites having characteristics which make them the most suitable for potential development. Developmental constraints are defined as those physical and locational characteristics of land and water resources that present hazards to or limit the economic feasibility and environmental acceptability of development.⁴¹ This analytical tool recognizes the differences in the physical and biological processes that characterize the environmental resources of an area, and the relative abilities of that area to tolerate development. It has the greatest utility when applied to vacant land and the evaluation of resources prior to commitment of that land to a specific use pattern. It enables one to segment an area in terms of the developmental constraints that are present.

Natural resources information and other relevant data applicable to the ASA are taken from four maps: Soil and Floodplain Constraints, Natural Resources, Regulatory Boundaries and Groundwater Characteristics. (Figures 3-1, 3-2, 3-3, 3-4.) The mapping units on each of these maps are listed in Table 3-4. A first step in utilizing these maps to locate areas most suitable for development involves the identification of severe as contrasted with moderate development constraints.

A composite map of these constraints is shown in Figure 3-8. Appropriate buffer zones around the most sensitive units were also mapped as areas where development should be restricted.

This analysis was conducted for the west and east sectors of the ASA. Developmental constraints for the two runways, their associated 750 ft. clear zones and the central portion of the Airport Study Area now being utilized by the Grumman Corporation are not shown on the map, since these areas are already developed. The results of this analysis are

portrayed on the Developmental Constraints map, Figure 3-6. Two designations are shown - those areas characterized as imposing severe developmental constraints (which include one or more of the mapping units with appropriate buffers determined to be a severe constraint); with development constraints to be considered to be moderate on the remaining acreage.

The acreages in the west and east sectors that have been categorized as having severe and moderate developmental constraints are listed in Table 3-5. In the west sector, 253 acres out of a total sector area of 789 acres have severe developmental constraints. Severe constraints in the 588 acre east sector are found on 178 acres.

In total, there are 946 acres in the east and west sectors combined where developmental constraints are moderate. From the natural resource protection perspective, potential development of the ASA for joint use should be targeted to this acreage, as opposed to the siting of facilities in those locations where the constraints are severe.

If and when development is actually proposed for the ASA, such development will be reviewed in detail through execution of the appropriate environmental impact statement preparation and review procedures.

Mitigation measures can be instituted to minimize the environmental impact of proposed development. Such measures would include siting structures and facilities in those locations where development constraints are moderate.

Where possible the protection of mature, natural vegetation associations is a first priority. Hence, it is recommended that the following hierarchy (listed in descending order from most to least value) be used in conjunction with the Vegetation Patterns in Areas Having Moderate Developmental Constraints map during preparation of site plans: Pine/oak Forest; Oak Forest; Pitch Pine Forest; Mixed Conifers & Deciduous Plantation; Old Fields; and Grass/Landscaped Areas. See Figure 3-6.



Figure 3-6 ASA Development Constraints
Composite

TABLE 3-4
Airport Study Area Developmental Constraints Analysis.

Map Name	Mapping Unit	Severe (S) or Moderate (M) Developmental Constraint
Soil and Floodplain Constraints Map	100 Year Floodplain	S
	Surface Water Contributing Area to Peconic River	S
	Steep Slopes	S
	Intermittent Streams	S (includes 100 ft. buffer in swale areas)
	Wet Soils	S
Natural Resources Map	Freshwater Wetlands	S (includes 100 ft. buffer)
	Natural Heritage Program Rare Species & Habitats	S (includes 1,000 ft. buffer to protect tiger salamander; and 100 ft. buffer to protect rare plants.
	Surface Waters	S (includes 100 ft. buffer)
	Pitch Pine Forest	M
	Pine/Oak Forest	M
	Oak Forest	M
	Mixed Conifers and Deciduous	M
	Old Fields	M
	Grass/Landscaped Areas	M
	Disturbed Areas	M
Regulatory Boundaries Map	Wild, Scenic and Recreational Rivers Act	S
	Peconic Estuary National Estuary Program	M
	Suffolk County Sanitary Code Articles 6 and 7	M
	Pine Barrens	M
	Central Suffolk SGPA	M
Groundwater Characteristics Map	Groundwater Divide	M
	Depth to Groundwater < 5'	S
	Depth to Groundwater > 5' < 10'	S
	Soil Sites and Groundwater Flow Directions	M
	Water Supply Wells	M
	Groundwater Contributing to Peconic River	M

TABLE 3-5
Calverton Airport Study Area Developmental Constraints.*

Sector	Area with Severe Constraints (acres)	Area with Moderate Constraints (acres)	Total Area (acres)
West Sector	253	536	789
East Sector	178	410	588
Total	431	946	1,377

*The Airport Study Area encompasses 2,913 acres. The area currently being used by the Grumman Corp. within the runway triangle is 1,536 acres. (of which 944 acres is Grumman Aerospace).

Habitat fragmentation is another issue that should be addressed in the site plan design process. In general, it is more advisable to retain large tracts of undisturbed woodland habitat, as opposed to a number of isolated smaller tracts.

The ASA is hydrologically linked to the coastal plain ponds and the Peconic River to the south and southwest, which contain sensitive pond shore habitats.⁴² Additional investigations will be required to predict the extent to which groundwater quality and quantity conditions would change as the result of ASA development, and how such change would affect the Peconic River system. Field data collection and modelling efforts will be required. Results of such analyses should be utilized to specify appropriate waste treatment facilities, the sites of such facilities, and where water supply wells should be located.

PART FOUR

Regulatory And Planning Boundaries

The previous sections of this chapter have addressed the physical attributes and natural resources of the entire PSA with special emphasis on the ASA. A prime purpose and result of the environmental analysis was the identification of constraints to development based on a variety of limits such as wetlands, rare species, etc.

This section contains a review and description of the various Federal, State and County statutory programs that may have jurisdictional impact on the ASA and/or the PSA.

They include:

- the Federal Peconic Estuary Program (PEP);
- Critical Environmental Areas (CEAs);
- Wild, Scenic and Recreational Rivers (WSRR);
- Special Groundwater Protection Areas (SGPAs);
- Coastal Area Boundary (CAB);
- Significant Coastal Fish and Wildlife Habitats (SCFWH);
- Suffolk County Pine Barrens (SCPB); and
- Suffolk County Sanitary Code Articles 6 and 7.

A composite map of the jurisdictions that affect the ASA is shown on Figure 3-3.

PECONIC ESTUARY NATIONAL ESTUARY PROGRAM - The Clean Water Act as amended in 1987 provided for the creation of the *National Estuary Program* (NEP) to promote long term planning and management in nationally significant estuaries threatened by pollution, development, or overuse. Overall responsibility for the program is given to the United States Environmental Protection Agency (EPA). The goals of the NEP are to protect and improve water and sediment quality, and to enhance living resources.

The Peconic Estuary was designated on 9 September 1991 as the 18th estuary of national significance under the NEP. A *Comprehensive Conservation and Management Plan* (CCMP) for the Peconics will be prepared using federal financial assistance. The boundary is shown on Figure 3-7. Portions of the Airport Study Area are included within the boundary. The Peconic NEP study area boundary may be changed as a result of future deliberations.

CRITICAL ENVIRONMENTAL AREAS - The New York State Environmental Quality Review Act (Article 8, N.Y.S. Environmental Conservation Law) rules and regulations (NYCRR Part 617) permit local agencies to designate a specific geographic area within its boundaries as a Critical Environmental Area (CEA). To be designated as a CEA, an area must have an exceptional or unique character covering one or more of the following:

1. a benefit or threat to human health;
2. a natural setting (e.g., fish and wildlife habitat, forest and vegetation, open space and areas of important aesthetic or scenic quality);
3. social, cultural, historic, archaeological, recreational, or educational values; or
4. an inherent ecological, geological or hydrological sensitivity to change which may be adversely affected by any change. Any unlisted action in a CEA must be treated as a Type 1 action requiring the completion of a long environmental assessment form and a coordinated review process.

The Critical Environmental Areas map shows that the Airport Study Area is not located within the boundaries of a CEA established by town or county governments pursuant to Article 8. Extensive areas within the PSA however, have been so designated. See Figure 3-8.

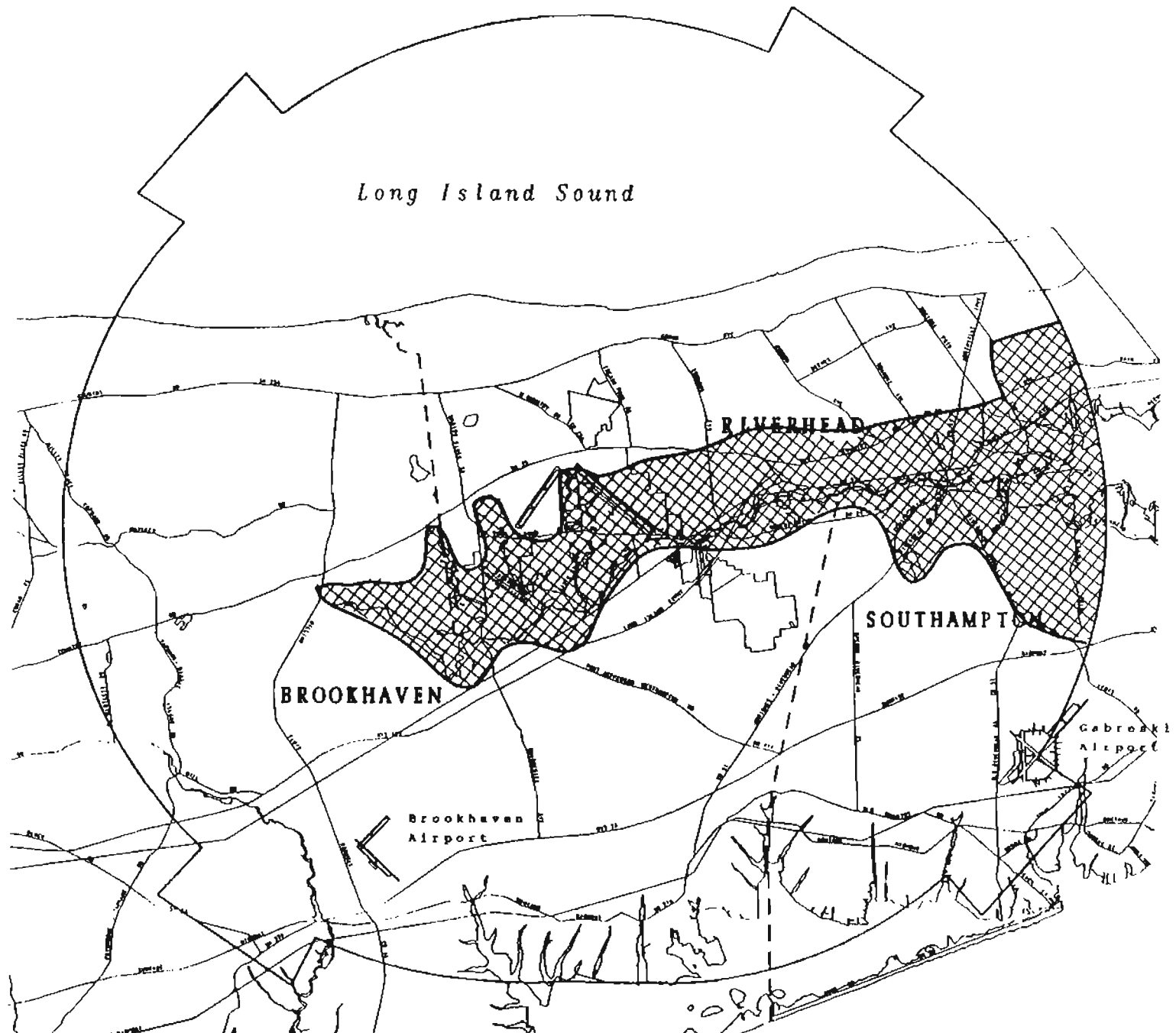


Figure 3-7 Federal Peconic Estuary Program (PEP)

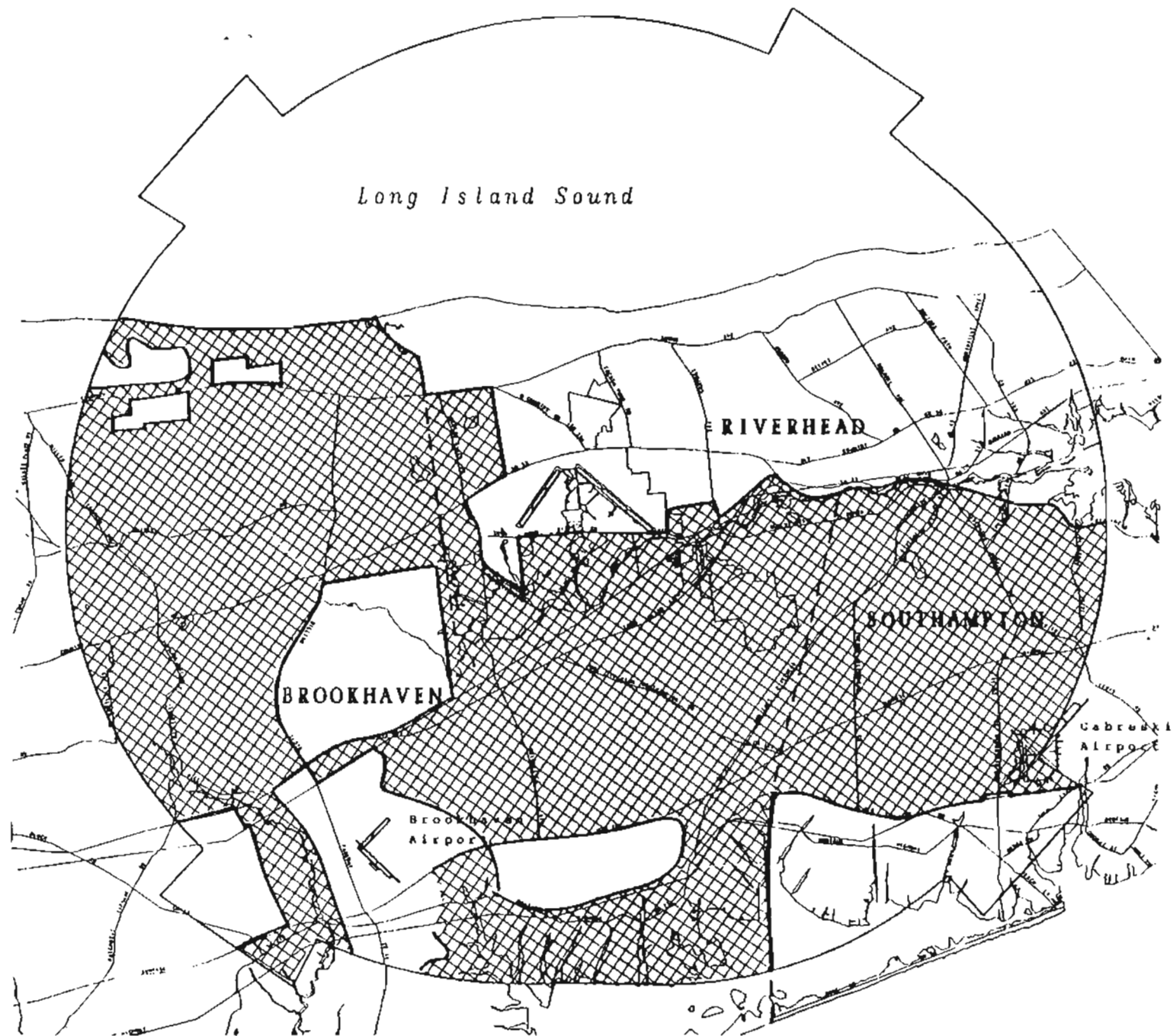


Figure 3-8 Critical Environmental Areas (CEAs)

WILD, SCENIC AND RECREATIONAL RIVERS - The Wild, Scenic and Recreational Rivers System Act (Title 27, Article 15, N.Y.S. Environmental Conservation Law) was passed in 1972. Rivers are placed in wild, scenic or recreational categories based on appearance and amount of nearby development. Existing uses of land in the designated river corridors are allowed to continue but may not be altered or expanded except pursuant to a permit.

The boundaries as shown on Figure 3-9 indicates that a small portion of the ASA has been included in the area designated under Article 15 as the Peconic River *scenic* corridor. Regulations do not permit the construction of multiple family dwellings or commercial and industrial structures in those areas designated as *scenic*.

SPECIAL GROUNDWATER PROTECTION AREAS - Central Suffolk - Figure 3-10 indicates that the Airport Study lies entirely in the Central Suffolk SGPA.

COASTAL AREA BOUNDARY - Another regulatory boundary that traverses the Primary Study Area is the New York State Coastal Area Boundary which is administered by the New York State Dept. of State (NYSDOS). For proposed state permits, funding, and direct actions, each state agency reviews its own actions, usually through the State Environmental Quality Review Act, to ensure that they are consistent.

As shown on Figure 3-11 the ASA is not located in the Coastal Area.

SIGNIFICANT COASTAL FISH AND WILDLIFE HABITATS - The NYSDOS has identified four Significant Coastal Fish and Wildlife Habitats within the PSA. The ASA is not located in any of these designated habitats. See Figure 3-12.

SUFFOLK COUNTY PINE BARRENS - The Pine Barrens Review Commission is empowered by County Charter provisions to study, recommend, report, review, notify, consult, and co-

ordinate with any local, state or federal agency concerning problems, needs, resources and decision-making that occur in the Pine Barrens Zone.

The Commission's primary jurisdiction covers advisory review of municipal zoning, special permit, variance and plat approval actions. Additionally, the purpose of the Commission is to propose, advise and increase public awareness on issues affecting the need to protect and enhance Suffolk County's water supply and the important ecological, cultural, historical, and aesthetic values of the Pine Barrens Zone.

The entire ASA is located in the Pine Barrens Zone, as shown on Figure 3-13.

SUFFOLK COUNTY SANITARY CODE ARTICLE 6, 7, and 12 - Article 6 of the Suffolk County Sanitary Code regulates the density and sewage facility requirements of residential and non-residential realty subdivisions and developments in Hydrogeologic Zones III, V and VI.

Article 7 of the Suffolk County Sanitary Code is primarily intended to provide additional protection to deep recharge areas and water supply sensitive areas from possible spills and discharges of certain toxic and hazardous materials. It should be noted that many high-tech manufacturing and assembly operations require the storage and use of significant volumes of hazardous materials, and that such operations would be strictly limited under Article 7 unless a sewage treatment plant with discharge outside Hydrogeologic Zone III is constructed.

Article 12 of the Suffolk County Sanitary Code provides restrictions and construction standards for toxic and hazardous materials.

As shown on Figure 3-14, the entire ASA is located within Hydrogeologic Zone III — a deep recharge zone — and is subject to the regulatory programs under these articles.

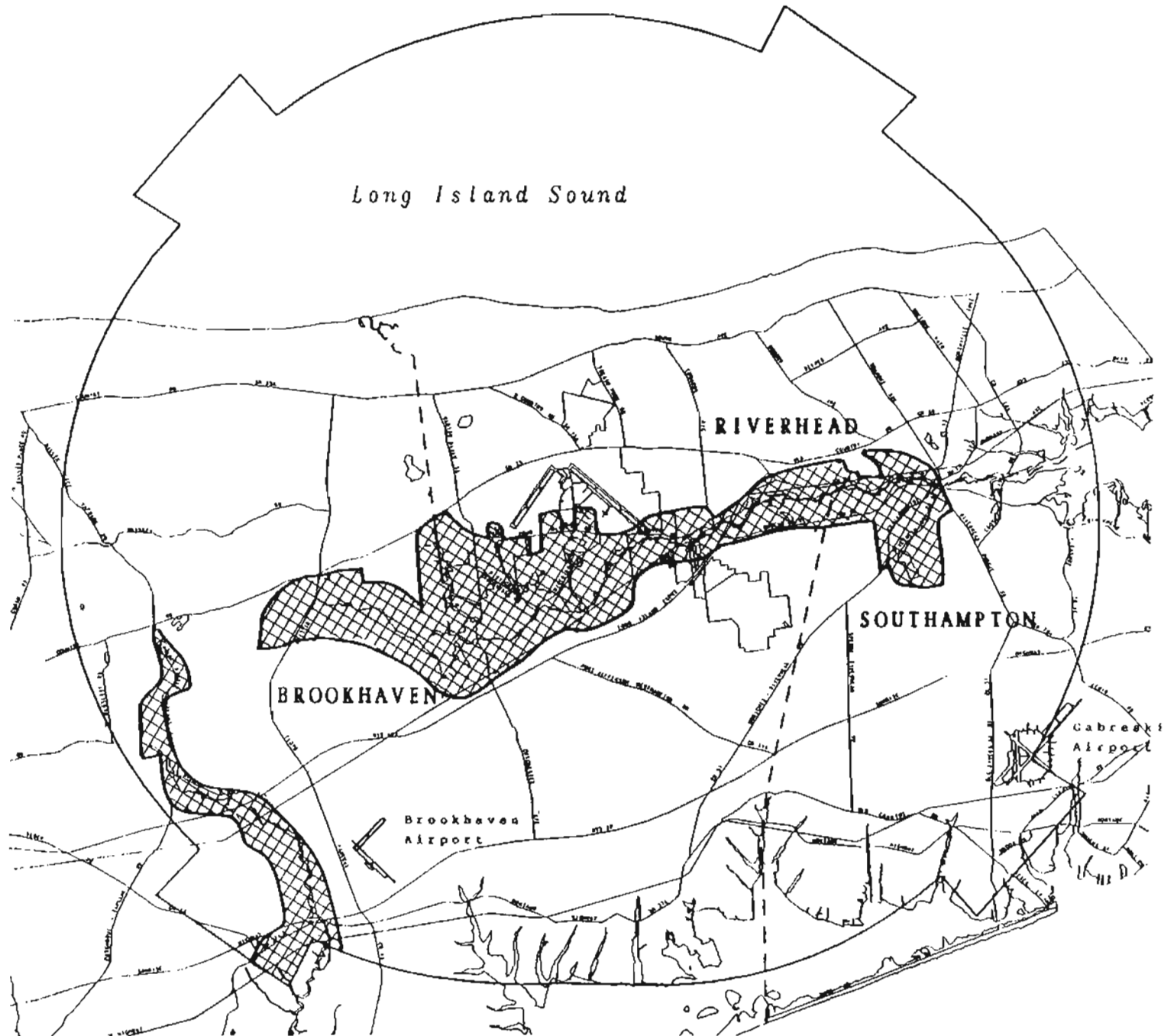


Figure 3-9 Wild Scenic and Recreational Rivers (WSRR)

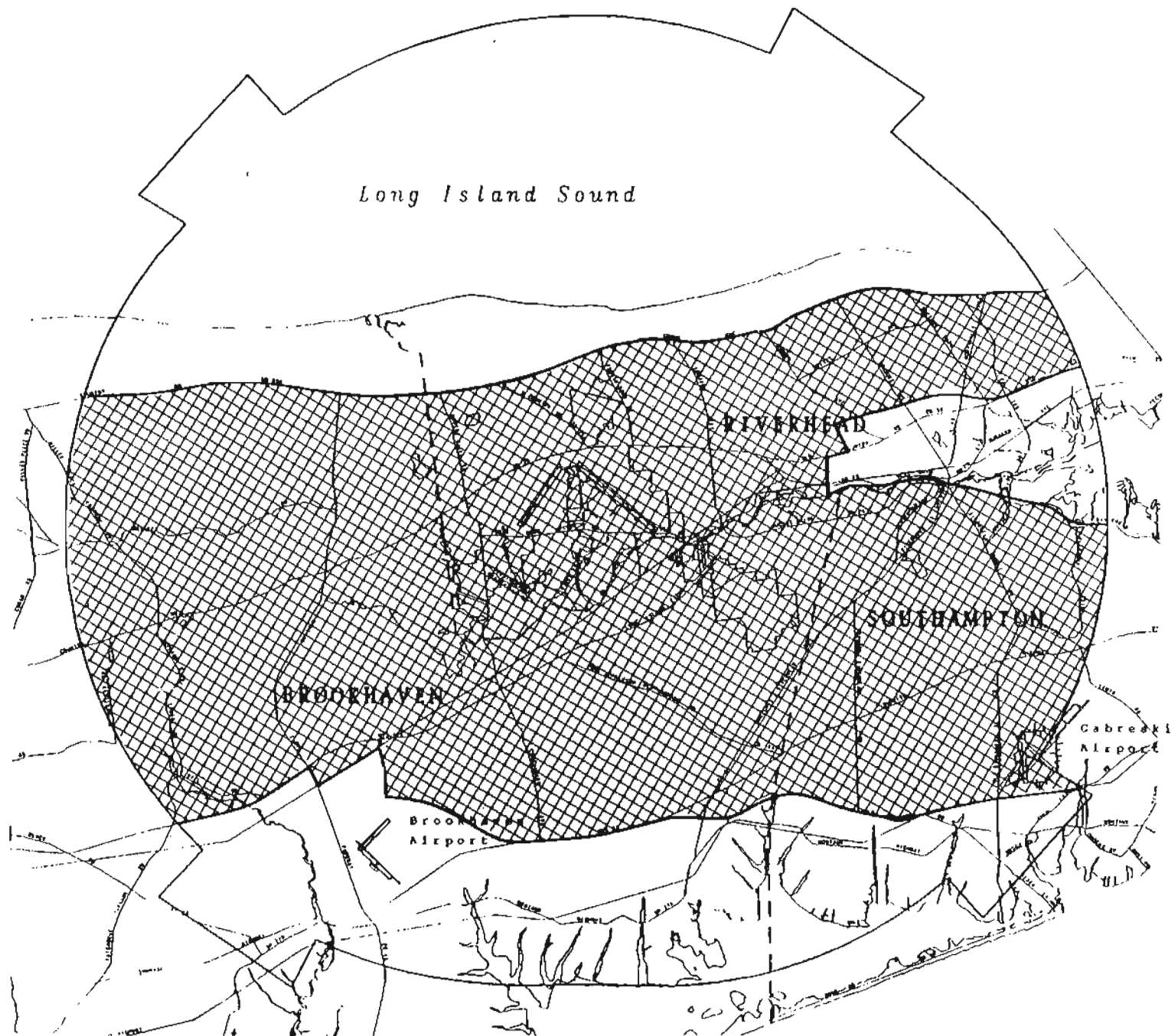


Figure 3-10 Special Groundwater Protection Areas (SGPAs)
(Central Suffolk)

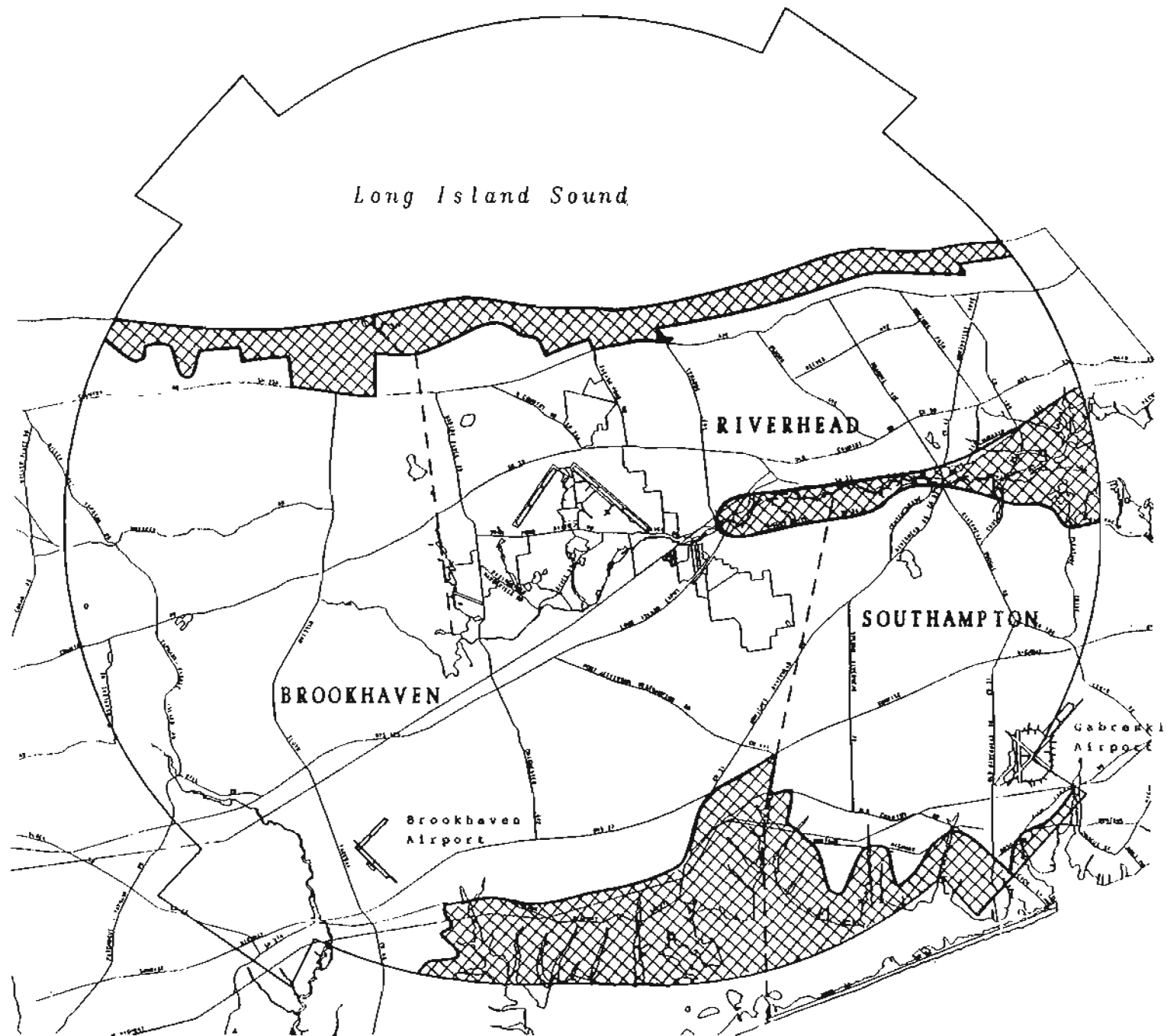


Figure 3-11 Coastal Area Boundary (CAB)

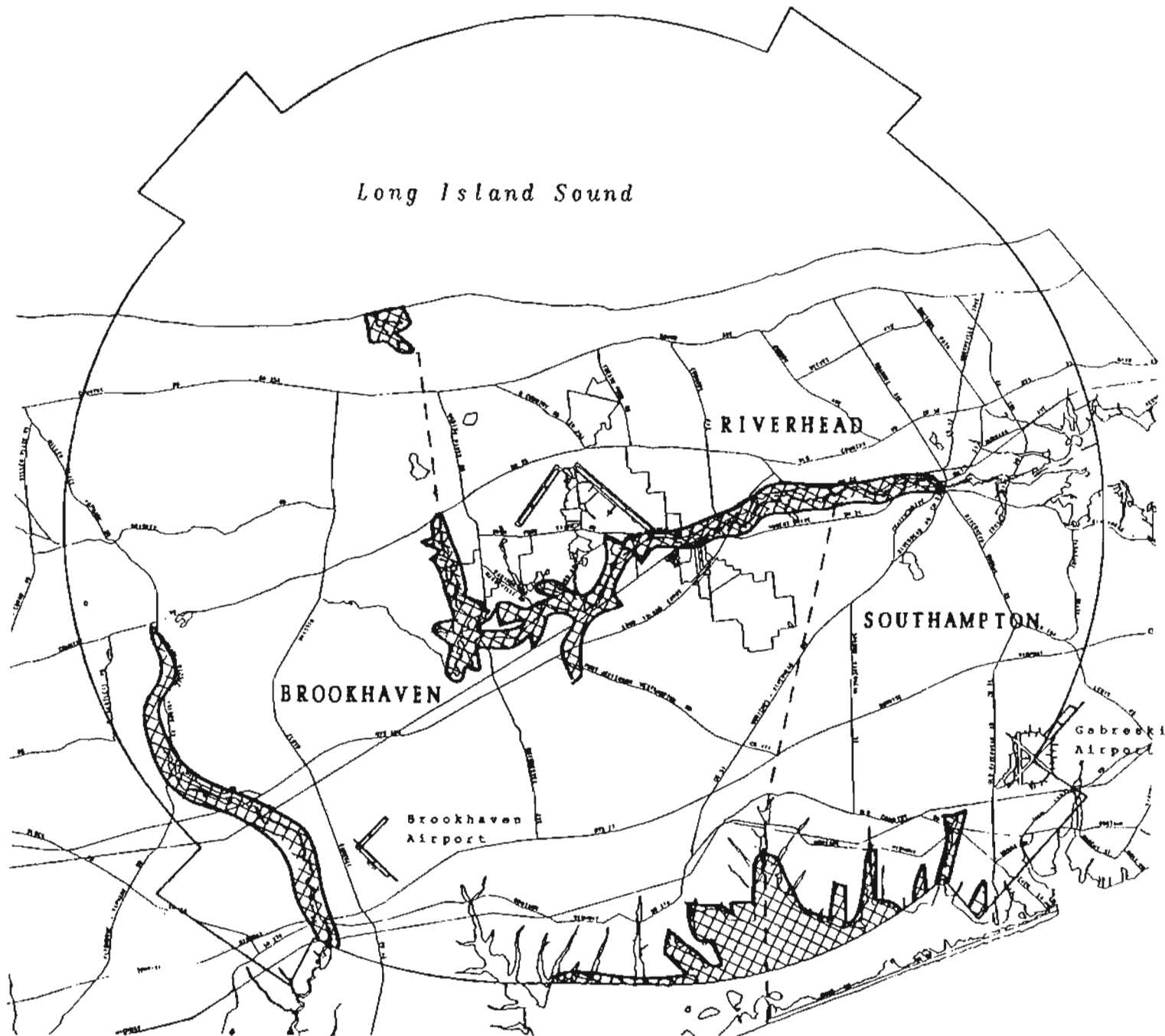


Figure 3-12 Significant Coastal Fish and Wildlife Habitats (SCFWH)

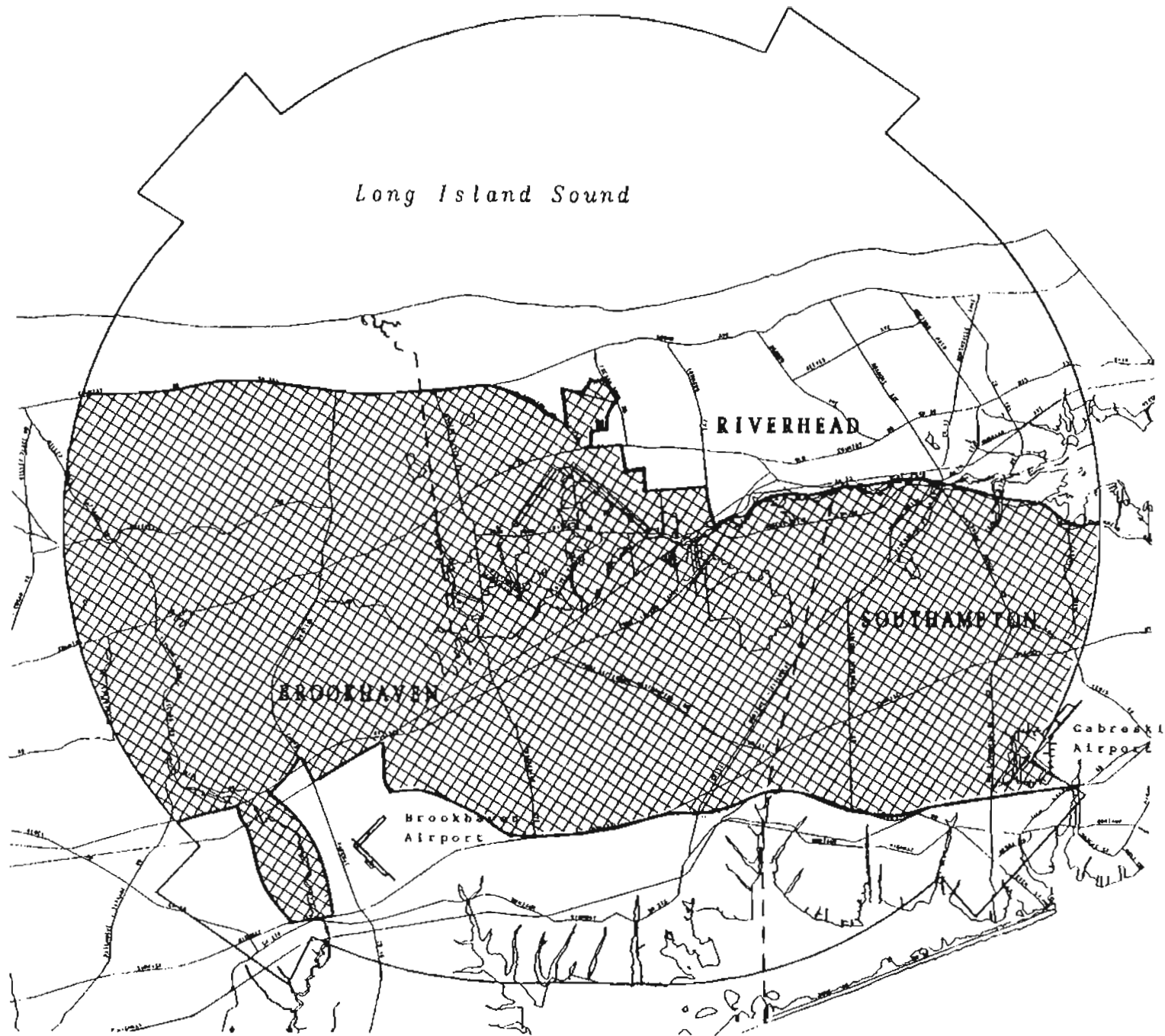


Figure 3-13 Suffolk County Pine Barrens (SCPB)

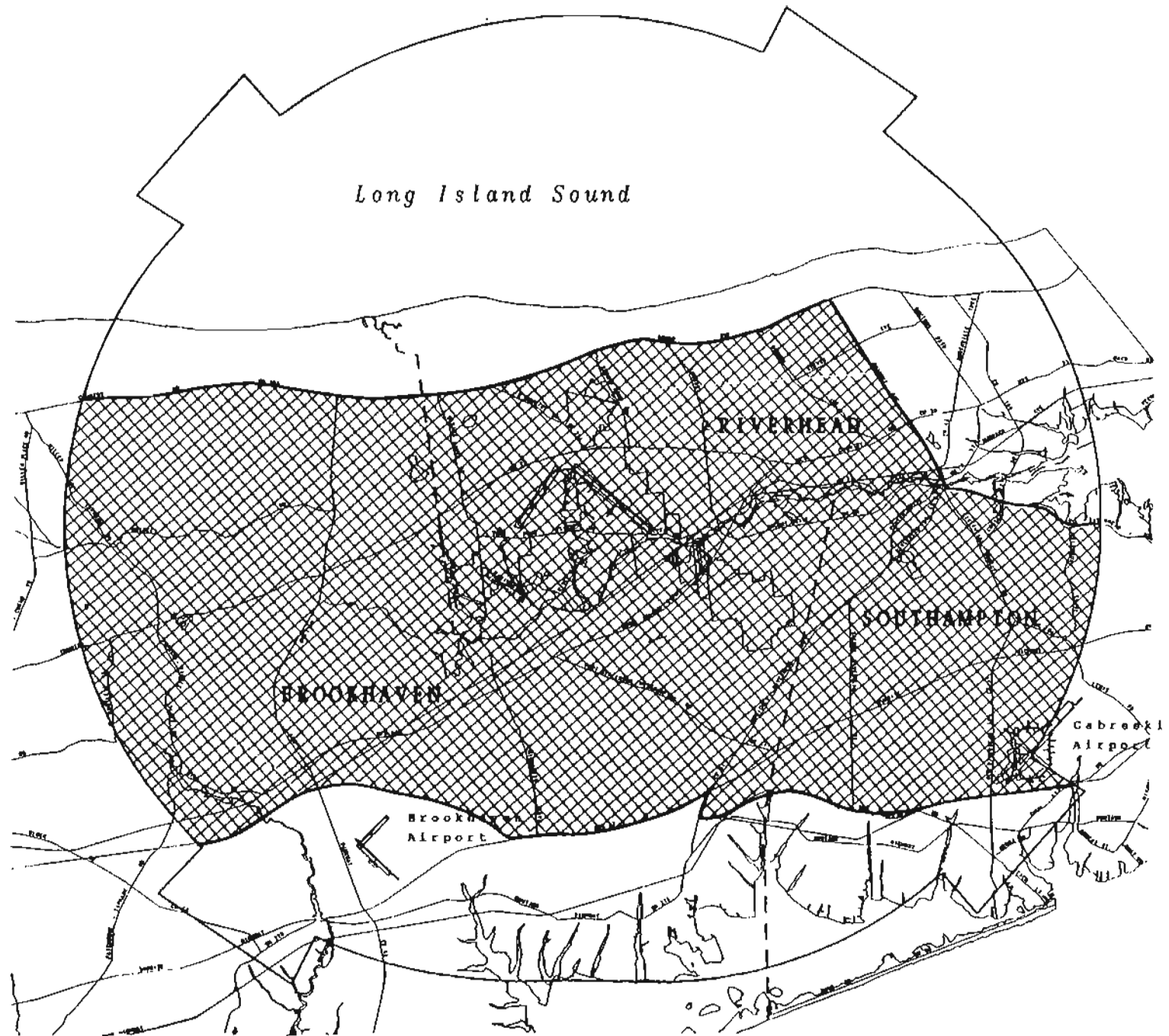


Figure 3-14 Articles 6 and 7 Suffolk County Sanitary Code

PART FIVE

Noise Analysis, and Regulatory

Introduction

This section provides a general review of the types of noise issues which might be associated with enhanced commercial use of *Naval Weapons Industrial Reserve Plant (NWIRP)* at Calverton. The chapter also reviews general noise issues associated with airport development and how noise and surrounding land uses are interrelated. A summary is provided of how airport noise is measured and what kinds of data are needed to create a picture of existing airport noise and to predict future noise patterns. Different kinds of airports and their noise characteristics are compared and national trends at work today are reviewed.

Other airports with operations similar those proposed for Calverton are discussed, and existing noise issues at Calverton are summarized together with the general issues likely to be associated with the alternatives currently under consideration. Noise studies are presented for three potential development alternatives and, finally, commonly used noise mitigation and land use compatibility strategies and techniques are highlighted.

Airport Noise Issues

NOISE AS AN AIRPORT PLANNING ISSUE - Noise is generally thought of as one of the major impact categories associated with aviation activity. When most people think of airport environmental impacts they think of the noise of jet aircraft taking off and landing over nearby residential areas. How much of an impact noise may be at a given airport depends very greatly on the type of airport and the land uses surrounding that airport. Even though noise is usually thought of as the major issue associated with airport planning, noise can be less of a concern at some airports when compared with other impact categories such as ef-

fects on long term land use or transportation patterns in surrounding areas.

Noise issues depend greatly on the type of airport being considered and its existing or proposed activity patterns. Whereas a major passenger airport can generate very high activity levels and consequently high noise levels, a minor freight or maintenance center may have comparatively few operations and hence generate considerably less noise.

The major source of airport noise is aircraft operations, i.e., aircraft arrivals and departures. The amount of noise generated depends, among other things, on the types of aircraft (the fleet mix) and the number of operations. Some aircraft are much noisier than other aircraft. Older jets tend to be the noisiest. The more aircraft operations, the more constant the noise and hence the greater the cumulative noise level. Additional factors include the direction of arriving and departing air traffic, the distance different aircraft in the fleet mix require to reach an altitude where noise becomes less audible and the arrival and departure patterns and the glide slopes of arriving aircraft.

The land uses which surround an airport are especially important to airport noise impacts. For noise to be heard it must have a receptor— someone who hears the noise. Generally, the more receptors are exposed to the noise, the more serious the impact is considered to be. Hence, siting studies for new airports tend to avoid urban areas where large numbers of people may be exposed to noise impacts.

For noise to have a negative impact it must interfere with human activity, such as sleep, speech, concentration or listening to music. Thus the type of activity or land use being exposed to the noise is also a critically important factor. A major jetport in the middle of an urban residential neighborhood can generate huge impacts on those who live near the airport. A smaller airport with only a few opera-

tions in a rural industrial park may have significantly less impact. This is considered to be so not only because there are fewer operations, but also because the surrounding uses are considered less noise sensitive (fewer and/or less sensitive receptors such as industrial or agricultural use).

On the other hand many people are of the opinion that airport noise may have more of an impact in rural areas even though there are fewer receptors because of the difference in ambient noise levels (i.e., the sound effects can sometimes seem more pronounced in a quiet rural area). These and similar discussions over time have brought increasingly more focus on what is termed single event noise as opposed to cumulative noise — which is the usual criterion for determining the effects of airport noise.

HOW AIRPORT NOISE IS MEASURED - Airport noise is measured in what is called the *A-weighted sound level* (sometimes referred to as **dBA** or **LA**). The A-weighted sound level is designed to simulate the sensitivity of the human ear to particular frequencies of sound. The A-weighted sound level is the basic unit of measurement for most Federal, State and local noise standards. Figure 3-15 provides a comparison of different A-weighted noise levels in dBA.

Noise measures for airports are generally divided into the categories of single event noise and cumulative noise. *Single-event noise* (sometimes referred to as **SEL** or **LAE**) is best understood as the dose of noise associated with single event such as an aircraft taking off from a runway and passing overhead. Single-event noise has been utilized as a means of comparing the relative noise contributions of individual aircraft types. SEL measures an individual noise dose by compressing the time of the event into a single interval, (see Figure 3-16) thus the total noise measure is often 5-10 dBA higher than that experienced over the actual time interval. Use of this descriptor for determining possible community reaction or overall sensitivity is generally considered to be of relatively little benefit since there presently are no land use guidelines which relate single-event noise and compatible land uses at any specific SEL value. A survey program at an airport or standard model inputs which provide average single-event noise data for specific aircraft

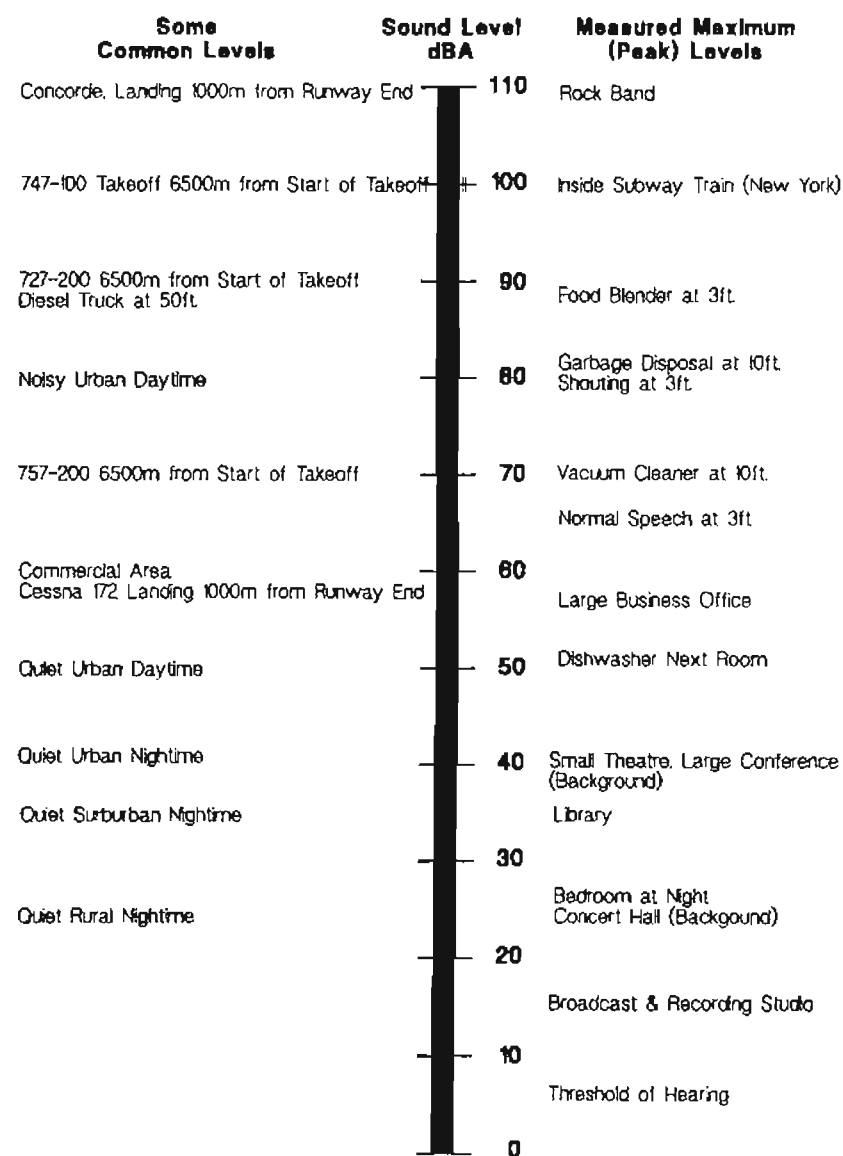


Figure 3-15

Common Environmental Sound Levels in dBA

Source: Boston-Logan International Airport Draft Generic Environmental Impact Report, EOE A #3247, Dec. 1991

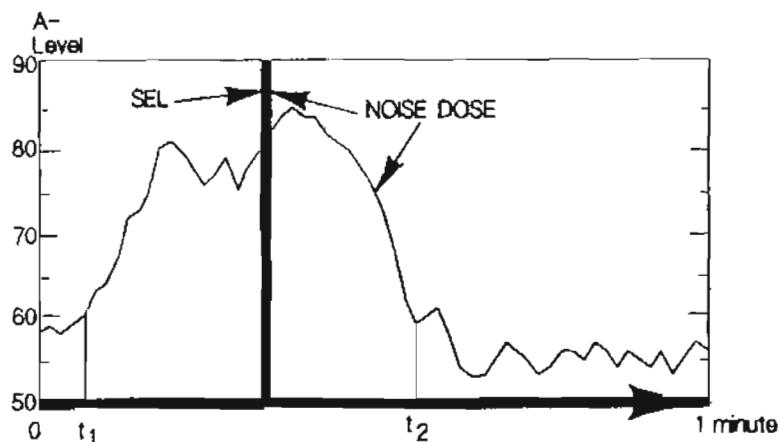


Figure 3-16
Sound Exposure Level (SEL) Measurement

Source: NWIRP Calverton Noise Contours, HMMH, Report No. 292420, 1992.

types can be used to develop cumulative noise measurements or **Ldn**.

Cumulative noise level measurements provide a single number which is equivalent to the total noise exposure over a specified time period. Thus cumulative noise measurement is based on both time and level. The standard FAA index for determining the cumulative noise exposure of individuals to noise, known as the *yearly day-night average sound level* or **YDNL** (also expressed as **Ldn**). The **Ldn** value is a single number descriptor of the time-varying noise energy occurring over a 24-hour period, with a weighting factor for the human sensitivity to noise during the nighttime period (10:00 PM to 7:00AM).

Ldn was developed and introduced as a single method for predicting the effects on a population of the average long-term exposure to noise. After many years of study and application, the **Ldn** has emerged as a workable and efficient tool for use in airport and land use planning and in relating aircraft noise to community reaction. This descriptor is used in airport environmental assessments and is the specified descriptor in Title 14 of the Code of Federal Regulations, Part 150 (14 CFR Part 150), which governs the FAA's noise

and land use compatibility planning process. Figure 3-17 provides a comparison of different noise levels in **Ldn**. Figure 3-18 shows the relationship between annoyance and noise exposure measured in **Ldn**.

Many people believe that single-event noise is also very important in understanding the noise impacts of airports. In 1990, in order to resolve an ongoing discussion about the relative effectiveness of cumulative versus single-event noise measurements, the FAA and the U.S. Environmental Protection Agency (EPA) reached an agreement to study FAA's analysis of noise impacts in environmental impact statements. The provision of single-event noise data is one of the subjects covered in the agreement and this supplemental analysis is in complete conformance with existing FAA guidance and in no way preempts or replaces the use of the **Ldn** descriptor.

Ldn is usually modeled over a given area in terms of noise exposure maps which consist of noise contours showing the various **Ldn** levels (65,70,75, etc.) expressed as series of lines or contours drawn over a map of a given site area. This map shows the overall site area exposed to a given **Ldn** level. The map can be generated by one of several computer models such as the *Integrated Noise Model* or **INM** developed by the FAA which models projected noise output in **Ldn** based on a variety of inputs about expected runway operations and types of aircraft using the runways.

For comparative evaluations at the proposed level of investigation, the **Ldn** unit and methodology are the most appropriate. Gross areas within the **Ldn** contours can be quickly and efficiently estimated and evaluated in terms of existing land use compatibility guidance.

Airport Compatible Land Uses

Land use impacts surrounding an airport site are largely determined by compatibility with forecast noise levels. Thus land use compatibility is strongly linked to the forecast noise contours (or airport noise exposure maps) which are the principal planning tool specified by the FAA for airport noise compatibility planning.

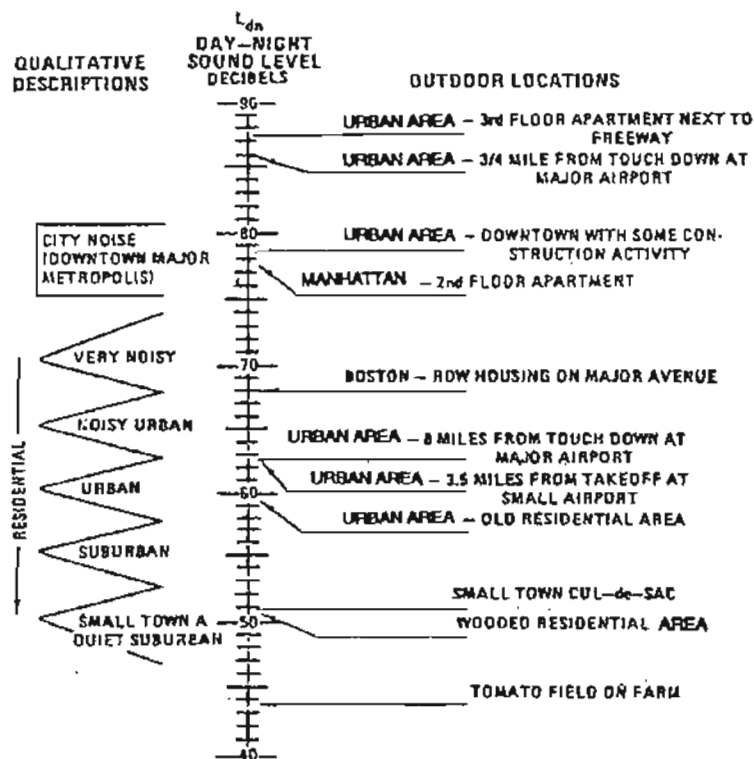


Figure 3-17
Examples of Day-Night Average Sound Levels, L_{dn}

Source: NWIRP Calverton Noise Contours, HMMH, Report No. 292420, 1992.

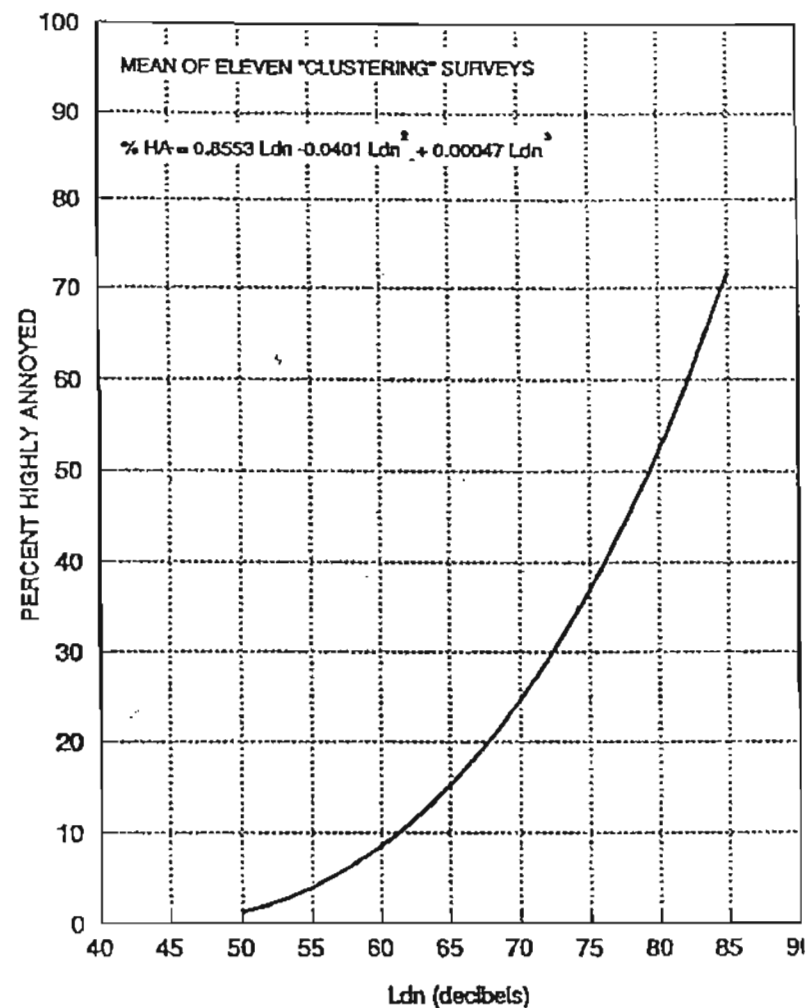


Figure 3-18
Annoyance and Noise Exposure in L_{dn}

Source: Theodore J. Schultz, *Synthesis of Social Surveys on Noise Annoyance*, Journal of the Acoustical Society of America, Vol. 64, No. 2, 1978.

Land use compatibility is usually measured according to the Ldn descriptor discussed above. Land use compatibility guidance is provided by the FAA which relates the noise levels expressed by the contours to various land use types experiencing that noise. Programs for airport noise compatibility planning are governed by the rules set forth in 14 CFR, Part 150 (also referred to as Federal Aviation Regulations or FAR Part 150). Part 150 also sets guidelines for which land uses are compatible with noise exposures over 65 Ldn using the Ldn descriptor. Land use compatibility guidelines from FAR Part 150 are shown in Table 3-6.

In general, Table 3-6 shows that residential land uses and some institutional uses such as hospitals, schools, churches and auditoriums or concert halls are listed as incompatible with noise levels over 65 Ldn without inclusion of indoor sound level reduction measures. Compatible uses for noise levels between 65 and 70 Ldn include some institutional uses as well as industrial, transportation, commercial (including office and retail), agricultural/forestry and active recreational facilities. Parks, resorts, camps and nature exhibits are also listed as compatible uses. Although not specifically listed, undeveloped open space and large areas of open water can also be considered as a compatible use and even as possible buffer zones. Above 70 Ldn most uses are listed as incompatible unless indoor noise sound level reduction measures are incorporated into the planning and design any structures associated with the use. Exceptions to this include amusements, parks, resorts and camps as well as mining and fishing activities. Table 3-7 provides similar guidelines for residential development from the Department of *Housing and Urban Development* (HUD).

Noise Models

Integrated Noise Models or INM's are most commonly used to model existing airport noise as derived from a noise survey or prospective future noise from anticipated future development scenarios. Existing noise can be modeled from a survey or from operations profiles using accepted data inputs for the existing fleet mix and operations profiles.

Prospective or predictive modeling often uses standard inputs for aircraft types derived from a prospective opera-

tions profile at the airport. Typical input data needed to construct a model include:

- The number of annual and average daily operations (landings and take-offs).
- The types of aircraft in the airport fleet mix (i.e., the types of aircraft landing and taking off at the airport — jets, propeller driven aircraft, etc.).
- Runway directional usage (which runways are used in what direction what percentage of the time).
- Arrival and departure patterns (what are the flight tracks and vertical profiles of aircraft landing on and taking-off from the runways)
- Day/night split (the split between day and nighttime operations)

Having produced an estimate of the annual number and type of operations that could be expected there is a need to identify the approximate runway utilization in order to calculate the noise impacts. The potential runway configurations (i.e., single direction operations or combinations of two runways) for each development alternative must be determined and typical aircraft assignments developed for each one. The annual wind data should be used to estimate the percent of the time that each configuration would have to be used to avoid violating crosswind constraints. When more than one configuration is acceptable, the preferential configuration should be assumed.

When all inputs are completed, the INM can then be used to generate Ldn contours for different hypothetical airport use scenarios. The contours can then be compared to the affected land uses to determine compatibility or incompatibility and hence the scope of anticipated impacts.

Airport Comparisons

Figures 3-19 through 3-21 provide several comparative sets of noise contours for different types of airports. These comparisons are intended to illustrate the wide disparities between different airport types and the degree to which different activity levels and types of activity can affect noise levels. Figure 3-19 shows 1987 contours for Logan International Airport in Boston, an airport which handled over 23

TABLE 3-6
FAA Noise and Land Use Compatibility Guidelines

—Yearly day-night average sound level, L_{dn} , in decibels—

	Below 65	65-70	70-75	75-80	80-85	Over 85
Residential						
Residential other than mobile homes and transient lodgings	Y	N	N	N	N	N
Mobile home park	Y	N	N	N	N	N
Transient lodgings	Y	N	N	N	N	N
Public Use						
Schools	Y	N	N	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y	Y	Y	Y
Parking	Y	Y	Y	Y	Y	N
Commercial Use						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale & retail-building materials, hardware & farm equipment	Y	Y	Y	Y	Y	N
Retail trade-general	Y	Y	25	30	N	N
Utilities	Y	Y	Y	Y	Y	N
Communication	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing general	Y	Y	Y	Y	Y	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y	Y	Y	Y	Y
Livestock farming and breeding	Y	Y	Y	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor sports arenas and spectator sports	Y	Y	Y	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts and camps	Y	Y	Y	Y	Y	Y
Golf courses, riding stables and water recreation	Y	Y	25	30	N	N

Key to Table 3-6

Y(yes)= Land use and related structures compatible without restrictions

N(No)= Land use and related structures are not compatible and should be prohibited

25,30, or 35= Land use and related structures generally compatible; measures to achieve outdoor-to-indoor Noise Level Reduction of 25,30 or 35 dB must be incorporated into design and construction of structure.

(There are special provisions pertaining to many of the compatibility designations that are not included here. Please refer to FAR Part 150, Appendix A, Table 1 for details.

Source: Title 14, Code of Federal Regulations, Part 150.

TABLE 3-7
HUD Site Acceptability Standards

Category	L _{dn} in dB	Special Requirements
Acceptable	Not exceeding 65 db	None
Normally Unacceptable	Above 65 dB but not exceeding 75 dB	5 to 10 dB additional attenuation required
Unacceptable	Above 75 dB	Approval with additional attenuation on a case-by-case basis

Source: *Boston-Logan International Airport Draft Generic Environmental Impact Report*, EOE #3247, December 1991.

million passengers that year together with almost 300,000 tons of cargo. Logan accommodated approximately 415,000 operations in 1987 and is the tenth busiest airport in the United States. Note that much of the noise contour area is over water. This is due to Logan's preferential runway policy which directs most operations over water instead of over adjacent residential areas. Also the 60 L_{dn} contour is not shown at Logan. Figure 3-20 shows noise contours for the year 1989 for Islip's MacArthur Airport. MacArthur currently handles over 1 million passengers per year with over 203,000 operations. Only about 14 percent of the operations at Islip are jet operations whereas at Logan over 60 percent of the total operations were jet operations in 1987.

Stewart handles both cargo as well as limited passenger traffic. Figure 3-21 shows existing conditions at the NWIRP facility at Calverton for the year 1989. Over a six year period between 1982 and 1987 Calverton averaged about 7,300 annual operations. Many of these were training or touch-and-go operations each of which count as two operations (a landing and a take-off).

As can be seen from these maps, the operations levels and the fleet mix can have dramatic effects on the extent of surrounding land exposed to noise contours above 65 L_{dn}. Interestingly, existing contours at Calverton are not that different in area affected from those at Islip. This may be due to the higher percentage of jet operations at Calverton (about 37 percent as opposed to 14 percent at Islip), the

types of aircraft in the fleet mix (military jets which are noisier than commercial aircraft), and the hours of operation (testing of certain aircraft requires some night-time operations at Calverton).

National Trends

Part 36 of the Federal Aviation Regulations (FAR Part 36) contains noise certification standards for most aircraft types and requires newly designed aircraft to be significantly quieter than older aircraft. Part 36 divides aircraft into different Stages. Many older aircraft such as DC-9's which are over 20 years old are defined as Stage 2 aircraft. These aircraft are generally noisier than more recently manufactured aircraft such as the MD-11 which are categorized as Stage 3.

In its 1989 Report to Congress on the Status of the US Stage 2 Commercial Aircraft Fleet, the FAA provided a forecast of the fleet mix from 1989 to the year 2010. This data is shown in Table 3-8. The forecast estimates that, as the Stage 2 aircraft are phased out and new aircraft are built, the percentage of Stage 3 aircraft in the national mix will increase from about 40 percent in 1989 to 80 percent by the year 2000 and to 98 percent by 2010.

A key factor in this phase-out is the age of these existing aircraft types. The referenced FAA report also shows the average age of these existing aircraft types. The FAA report also shows the average age of the U.S. aircraft fleet as of 1989. Most of the DC-9's are presently more than 20 years old. By 2010, most of the 727-200's will be 35 years old. No new Stage 2 aircraft are being constructed.

Furthermore, as a result of 1990 Federal legislation, no Stage 2 aircraft may be operated at any airport within the continental United States beyond the year 2003. It is, however, possible that this legislation may be amended in the future to extend this deadline—particularly if economic difficulties persist in the airline industry. Nonetheless, it is likely that existing trends alone will substantially reduce the percentage of Stage 2 aircraft in the national fleet mix over time. By way of example, since 1984, the percentage of Stage 3 aircraft in the airport fleet mix at Boston's Logan International Airport has steadily increased, as shown in the data in Figure 3-22

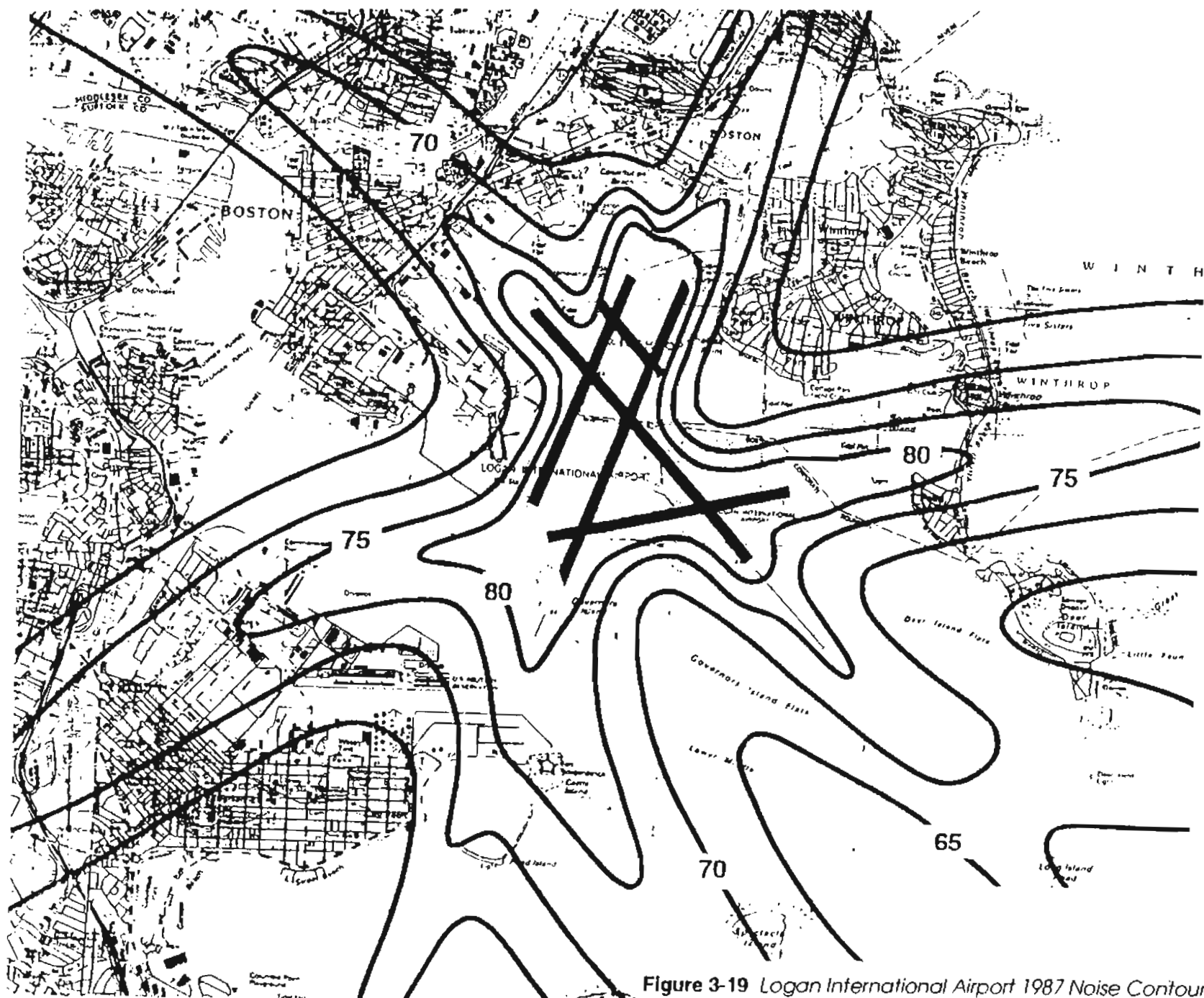


Figure 3-19 Logan International Airport 1987 Noise Contours

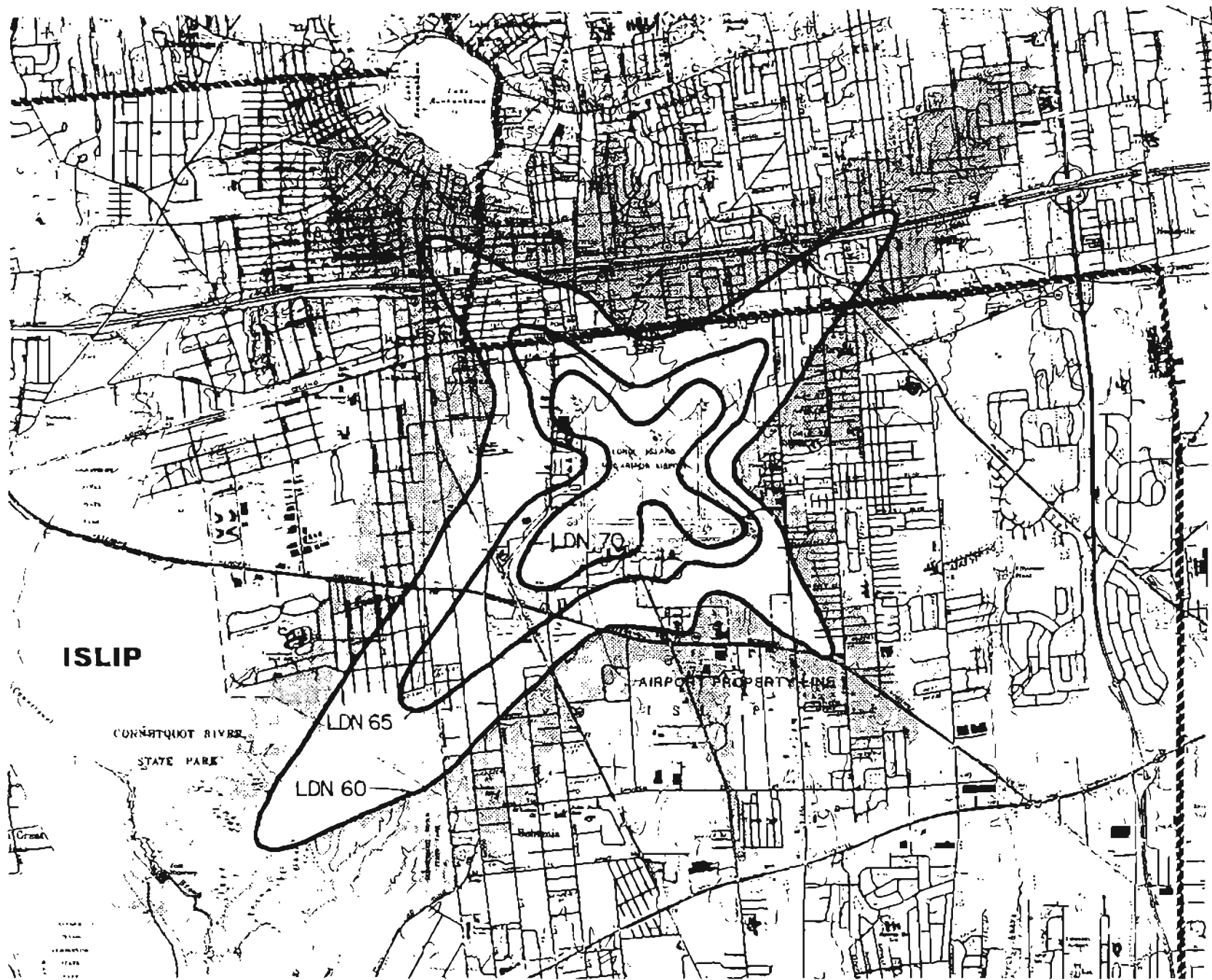


Figure 3-20 Islip/MacArthur Airport 1989 Noise Contours

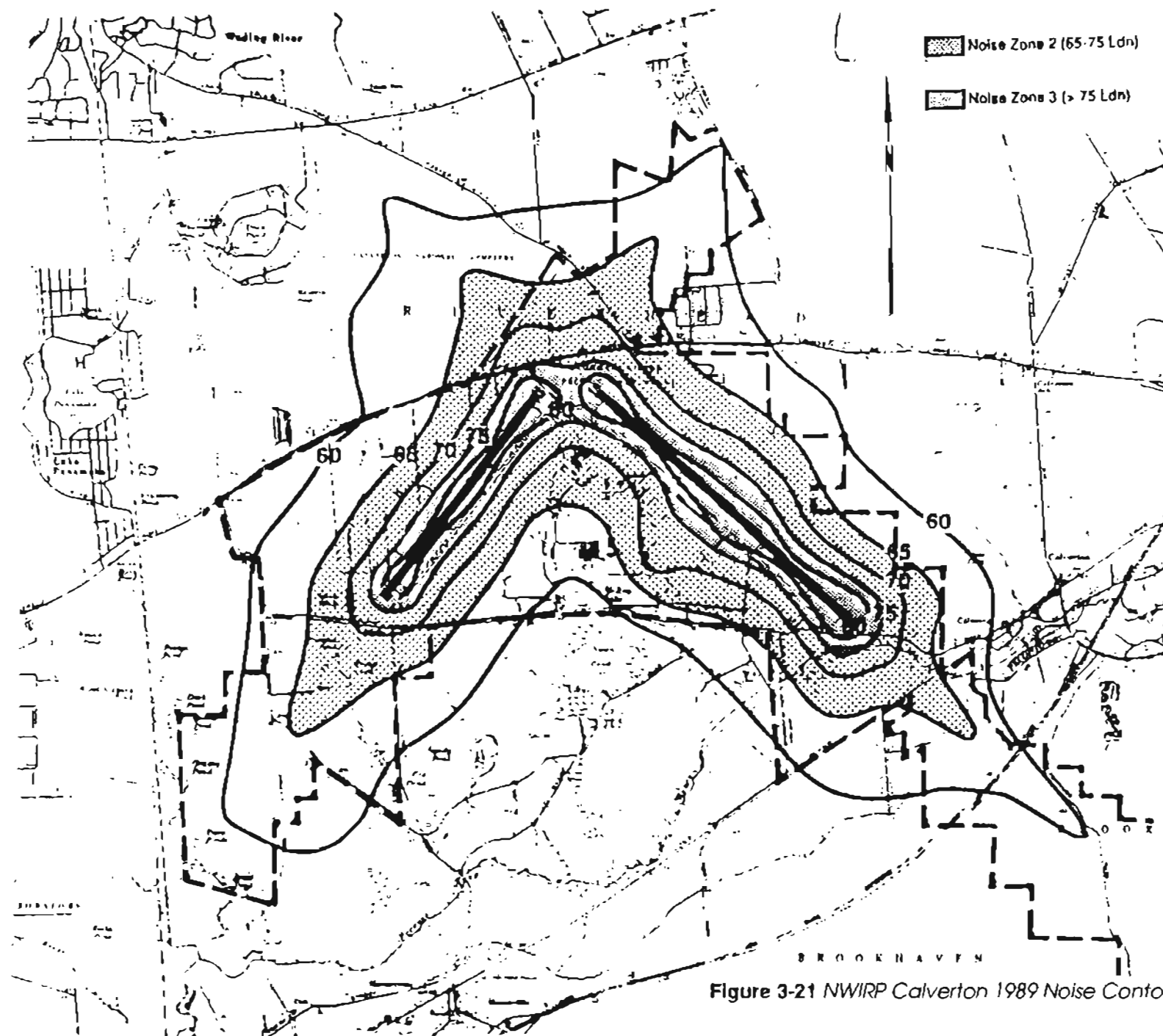


Figure 3-21 NWIRP Calverton 1989 Noise Contours

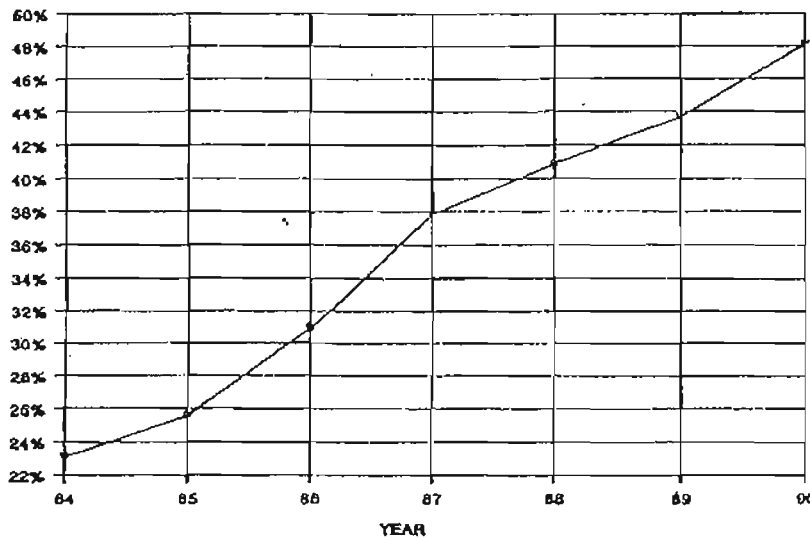


Figure 3-22
Logan International Airport Stage 3 Percentage by Year
 Source: Massport

The Logan Stage 3 mix increased from 23 percent in 1984 to an estimated 48 percent in 1990. Massport's preliminary forecast of the future Stage 3 mix is 77 percent by 1995, 87 percent by the year 2000 and virtually 100 percent by 2010.

The difference that gradual conversion to an all Stage 3 fleet mix can make can be quite dramatic. Figure 3-23 shows the forecast difference for a generic airport footprint used in the Second Major Airport Siting Study in Massachusetts. Essentially, the conversion to an all Stage 3 fleet mix reduces the area covered by the 65 Ldn contour to 4 square miles from almost 18 square miles generated by the present day fleet mix at Logan International Airport in Boston. A similar comparison can be made in terms of SEL. Figure 3-24 is from the recently published FAR Part 150 study for Islip/MacArthur Airport and compares the SEL departure characteristics for typical Stage 2 and Stage 3 aircraft

TABLE 3-8
FAA U.S. Airline Fleet Forecast (As of January 1, 1989)

Model	1989	1995	2000	2005	2010
Stage 2					
DC-8-50	16	0	0	0	0
DC-8-60's	61	28	0	0	0
DC-9	508	346	188	73	0
B707	35	6	0	0	0
B727-100	340	136	55	5	0
B727-200	851	769	499	199	68
B737-100	18	0	0	0	0
B737-200	391	318	189	70	23
BAC-111	38	0	0	0	0
F-28	47	39	29	19	9
Subtotals	2305	1642	960	366	100
Stage 3					
MD-80	341	498	525	525	461
MD-87	0	24	24	24	24
MDPF-110	0	0	94	274	449
MDPF-150	0	0	145	321	496
DC-8-70s	87	85	56	25	11
DC-10	187	182	182	162	103
MD-11	0	39	82	131	189
L-1011	113	114	114	106	77
A300	57	81	81	81	77
A310	19	23	23	23	23
A320	0	135	256	351	351
A330	0	6	32	53	78
A340	0	12	31	55	80
F100	0	29	29	29	29
BAE-146	57	62	62	62	57
B737-3/4/500	299	627	773	773	765
B-7J7PF	0	0	93	463	838
B747(2)	171	233	289	322	350
B757	122	363	477	477	470
B767	111	244	463	651	878
Subtotals	1564	2757	3831	4908	5806
Totals	3869	4399	4791	5274	5906
% Stage 2	59.6%	37.3%	20.0%	6.9%	1.7%
% Stage 3	40.4%	62.7%	80.0%	93.1%	98.3%

(1)-1989 FAA Fleet Forecast

(2)-Have Been Assumed As Stage 3

Source: Report to Congress, Status of the U.S. Stage 2 Commercial Aircraft Fleet, FAA 1989.

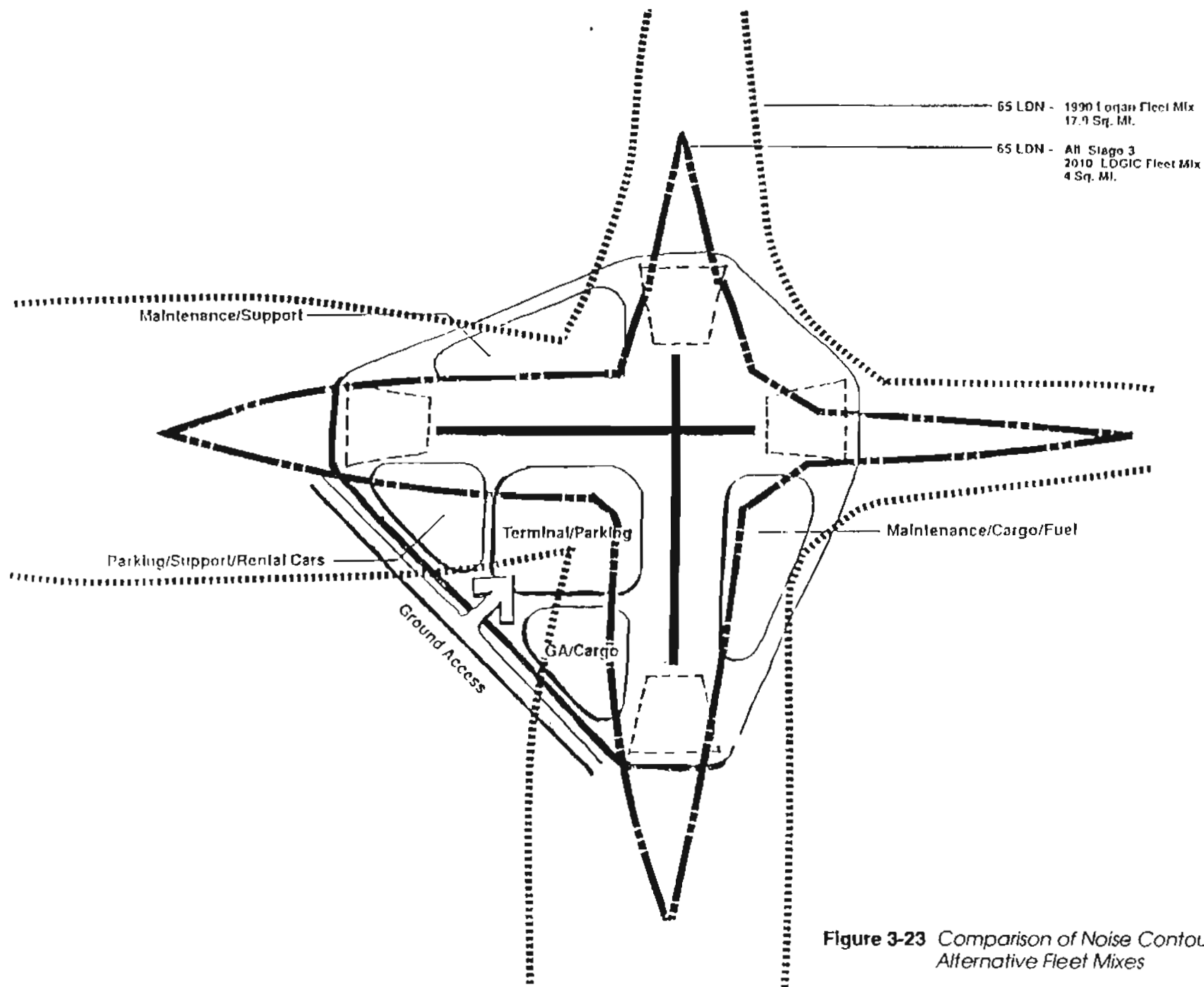


Figure 3-23 Comparison of Noise Contours:
Alternative Fleet Mixes

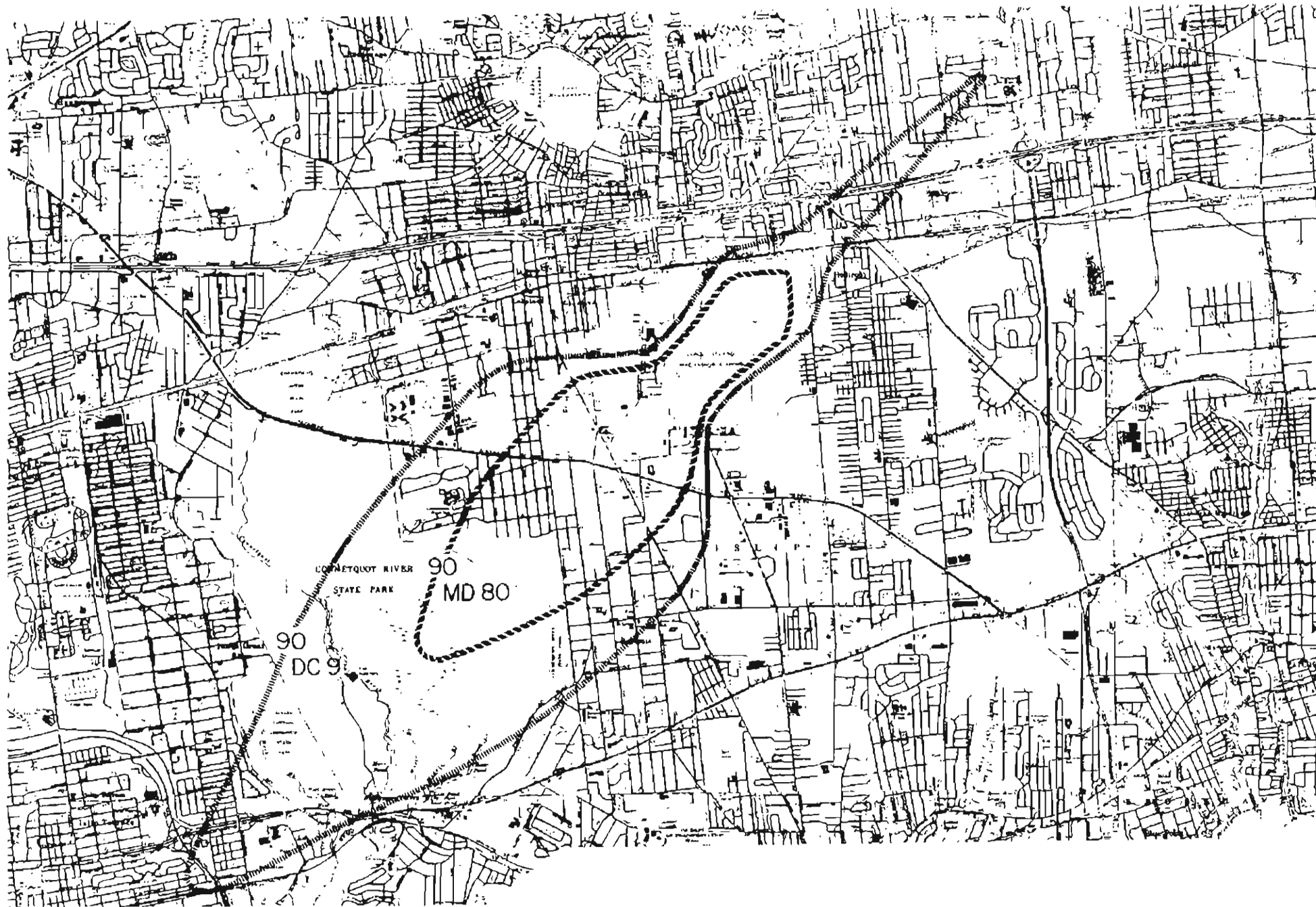


Figure 3-24 Comparison of SEL for Typical Stage 2 and Stage 3 Aircraft

Comparable Airports

Although there are at present no fully realized examples of operating all-cargo airports in the United States, the concept continues to generate much interest and several facilities are planned in different parts of the country. The idea of an airport specifically designed for cargo and maintenance use has come closest to realization at Alliance Airport although all-cargo operations have not yet been implemented at that airport (see discussion below). In addition, the role of air-cargo operations has become increasingly important to a number of existing airports and there has been a concerted effort on the part of several airports across the country to improve the on-site cargo facilities for the purposes of taking advantage of the increase in international and domestic cargo transport. The majority of today's air-cargo arriving and departing from airports is transported in the baggage holds of commercial passenger flights and is then dispersed via ground transportation (truck or rail) to its destination. As a result of this traditional form of air-cargo transport, many existing airports have chosen to upgrade, expand and compliment existing air-side cargo facilities to accommodate the established tenants and to hopefully attract new tenants.

Recent studies have cited over a dozen airports in the United States that are currently seeking to increase their overall cargo capabilities including air, truck and rail, thus incorporating a modified form of the air-cargo airport concept. One of the important components of an all air-cargo facility is the development of an abutting or on-site industrial park. In order to compliment and improve the marketability of their cargo facilities several airports have recently encouraged and participated in the planning and development of industrial parks. This development more than the strictly all air-cargo facility appears to be the direction that cargo transport enhancement is leaning towards. This direction could be construed as generally consistent with that being pursued at Calverton where cargo use may be mixed with maintenance and Grumman/Navy use is also planned to continue.

For the purposes of this section Three airports which best exemplify the concept have been chosen to be profiled. These include:

- Alliance Airport, Fort Worth, Texas
- Stewart International Airport, Newburgh, New York
- Huntsville International Airport, Huntsville, Alabama

Alliance Airport is the only one of the three that has been planned primarily as an all air-cargo facility and is to date the only such facility in existence. The two other airports, Huntsville and Stewart International, are either designed as or are primarily used for passenger services. However they both have been aggressive in developing their air-cargo facilities and its ancillary uses in highly competitive ways. Since there are few examples of primary air-cargo facilities in the U.S. available for comparison these four have been chosen to provide a broad range of issues which may be applicable to the future development of Calverton as an air-cargo facility. Many of the noise issues at each of these facilities may not be directly comparable to those that may be encountered at Calverton but they can be used to get a sense of scale given their noise impacts in relation to their operations. Varying degrees of information were available for each airport. The profiles below are intended to serve as general sketch profiles of each airport including the general character of operations and the general level of noise information available.

Alliance Airport, Fort Worth, Texas

Alliance Airport in Fort Worth Texas opened in 1990 and is a joint public/private enterprise. The Perot Group, a private investment firm, donated 418 acres for the site of the new airport and participated in the joint development of the site with the City of Fort Worth. The City of Fort Worth owns and operates the airport. The development of Alliance Airport garnered a good deal of support from both the public and private sectors. The facility was built in the relatively undeveloped northwest quadrant of the Dallas-Fort Worth metroplex, adjacent to the community of Haslet, within the City of Fort Worth.

The airport was designed and built specifically for the manufacturer, distributor and cargo carrier. Tenants have not only air field access but have ample highway and rail access as well. There is one 9,600 foot runway with a control tower. There is currently an effort underway to extend the runway by 3,400 feet which will make it possible for the runway to accommodate some of the heaviest aircraft. The site is adjacent to a planned industrial park. Part of the original intent of the airport was to serve the region's air-cargo transportation needs by encouraging cargo carriers to base their activities there and subsequently use the airfield as the primary air transport facility as opposed to the current use of the Dallas/Fort Worth International Airport. To date the facility has not been successful in its primary mission and is currently serving as a multi-purpose reliever airport to Dallas/Fort Worth International Airport.

There are presently no all air-cargo carriers operating out of Alliance Airport. However, American Airlines, one of the facility's major tenants has an aircraft maintenance facility on site. Other major tenants include a Santa Fe Railway automobile unloading/distribution facility, Ishida Aerospace Manufacturing and the U.S. Drug Enforcement Agency. In order to further promote the facility as an international industrial/air-cargo complex, the Alliance Corridor Foreign Trade Zone has been developed and is currently under review. The Foreign Trade Zone is presently comprised of 9,600 acres. Proponents of the trade zone claim that it will be the nation's largest such zone combining international air transportation with an attractive business environment.

According to figures presented in the Final Environmental Assessment for the runway extension there were 146,516 operations at Alliance in 1991. The majority of those operations were general aviation, air taxi, and commercial aircraft training. In 1991 no commercial operations took place however there were approximately 2 - 3 operations a week generated by the American Airline Maintenance facility between October (when the facility opened) and December. According to airport officials, the maintenance facility generated a total of 176 operations in 1992.

Alliance Airport has been developed in a relatively unpopulated area. Large land areas are still available for development and there is an aggressive public-private marketing strategy. In addition the City of Fort Worth has developed an Airport Zoning Overlay District for the purposes of encouraging compatible land uses around the airport. The land use controls and height restrictions designed to protect against noise incompatible land uses serves to further make palatable development opportunities while protecting the general populace in the area. Residential construction in the Overlay District is forbidden.

Based on the existing noise contours (see Figure 3-25) or the existing runway, 24 residential properties will be significantly impacted by noise exposure by 1996. The majority of the 65 Ldn noise contour is presently confined to the boundaries of the airport with the exception of an area to the northwest of the airport. No commercial, institutional or other sensitive land use areas presently fall within the 65 Ldn noise contour. Despite this, the City of Fort Worth is currently in the process of developing a noise policy and program based on the findings of a FAR Part 150 study also underway. The subsequent noise policies and programs combined with the Airport Zoning Overlay District will serve to further address inappropriate land use development associated with airport development and operation.

Stewart International Airport, Newburgh/New Windsor, New York

Stewart International Airport, originally a surplus Air Force Base, was turned over to the State of New York in 1970. It was initially planned as a reliever airport serving the New York City area airports (Newark, LaGuardia, JFK). According to an FAA study entitled Report to Congress, *A Feasibility Study of Regional Air-Cargo Airports, August 1991* (hereafter referred to as the **FAA Study**), Stewart is designed to attract passenger as well as cargo service. The study further notes that the passenger service is considered *a vital supplement to air cargo* at Stewart. Due to its proximity to a large population and its relatively central location in the metropolitan region, Stewart is considered an ideal alternative to the other major New York airports not only for passenger service but for cargo and other commercial service as well.

The airport was designed and built specifically for the manufacturer, distributor and cargo carrier. Tenants have not only air field access but have ample highway and rail access as well. There is one 9,600 foot runway with a control tower. There is currently an effort underway to extend the runway by 3,400 feet which will make it possible for the runway to accommodate some of the heaviest aircraft. The site is adjacent to a planned industrial park. Part of the original intent of the airport was to serve the region's air-cargo transportation needs by encouraging cargo carriers to base their activities there and subsequently use the airfield as the primary air transport facility as opposed to the current use of the Dallas/Fort Worth International Airport. To date the facility has not been successful in its primary mission and is currently serving as a multi-purpose reliever airport to Dallas/Fort Worth International Airport.

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Stewart Airport is located approximately 5 miles west of Newburgh in Orange County, New York, and has one 12,000 foot runway. The FAA Study notes that more than two million people live within a 45 minute drive from this facility. This, combined with the fact that Newburgh is within commuting distance of New York City, makes Stewart

...an ideal site for a satellite commercial service airport for the New York City area (FAA Study).

The area surrounding Stewart is a mix of urban, suburban and rural uses. The airport is located less than 2 miles south-west of the Interstate 84/New York Thruway Interchange. Stewart has excellent transportation access to the region. Other key by transportation assets include close by trucking and freight distribution centers.

The airport was initially composed of 1,550 acres prior to the release of the property to the State of New York in 1970. The State Legislature further authorized the purchase of additional lands in anticipation of future airport development and to provide a buffer to the surrounding communities. As a result, approximately 8,000 acres to the west of the original airport was purchased and is currently being managed by the New York Department of Environmental Conservation. This area still remains primarily undeveloped and has generally been used for hunting, fishing and agricultural uses. There is presently an Environmental Impact Statement study underway to analyze the possible development of approximately 1,200 acres for other airport uses. The disposition of the remaining 6,800 acres remains in question.

Since assuming management of Stewart in 1983, the New York Department of Transportation (NYDOT) has broadened the range of services available to include general aviation, commercial, cargo and corporate operations. In addition to aggressive aviation-related marketing, the NYDOT was actively involved in developing the on-site industrial park and various other airport properties. Cargo operations serve as a function of increasing commercial passenger service as well as the activities of the adjacent industrial park.

Currently, there is one 50,000 square foot cargo terminal located at the west end of the runway. A 200,000 square-foot

addition to that terminal is under consideration. Another 250,000 square-foot facility is planned for the south end but there has been no significant movement towards the development of that facility since August 1991. The industrial park and other airport facilities are used for several distribution centers, production plants and other commercial activities. Consolidated Freightways/Emery Worldwide uses its facilities at Stewart as their regional trucking hub. Other major tenants include Airborne, Anheuser-Busch, American Express, Federal Express, the U.S. Postal Service Regional Mail Facility, Air National Guard, and U.S. Department of Agriculture Animal Import Center. There is also a U.S. customs center for international flights.

The FAA Study considers that Stewart's success as an all air-cargo facility is debatable. Since American Airlines and two other regional carriers began scheduled service in April of 1990 commercial passenger flights have accounted for Stewart's rise in ranking among nationwide airports. Passenger flights are major cargo carriers at Stewart. All air-cargo operations accounted for less than 1 percent of all operations at Stewart as recently as August 1991.

Current operations data, noise level information, noise impact assessment and noise contours for Stewart are presently unavailable. The last series of noise contours produced for Stewart were developed in 1984 from information collected in 1975 and 1977. This information is considered outdated by Stewart officials and therefore not relevant to any comparative efforts.

According to Stewart Public Affairs Department there is presently a new master planning process underway as well as an FAR Part 150 Study. The old master plan dates back to the early 1980's and is considered outdated. A document entitled *Draft Scope of Work, Stewart International Airport, Airport Planning Studies PIN8915.45.101 Draft Date: June 29, 1992*, (hereafter referred to as the **Scope**) is an outline of the various comprehensive studies to be embarked on in the near future including a complete Master Plan Update and a FAR Part 150 Study. The preface of the Scope notes that these studies are needed for the purpose of balancing the needs of aviation growth with environ-

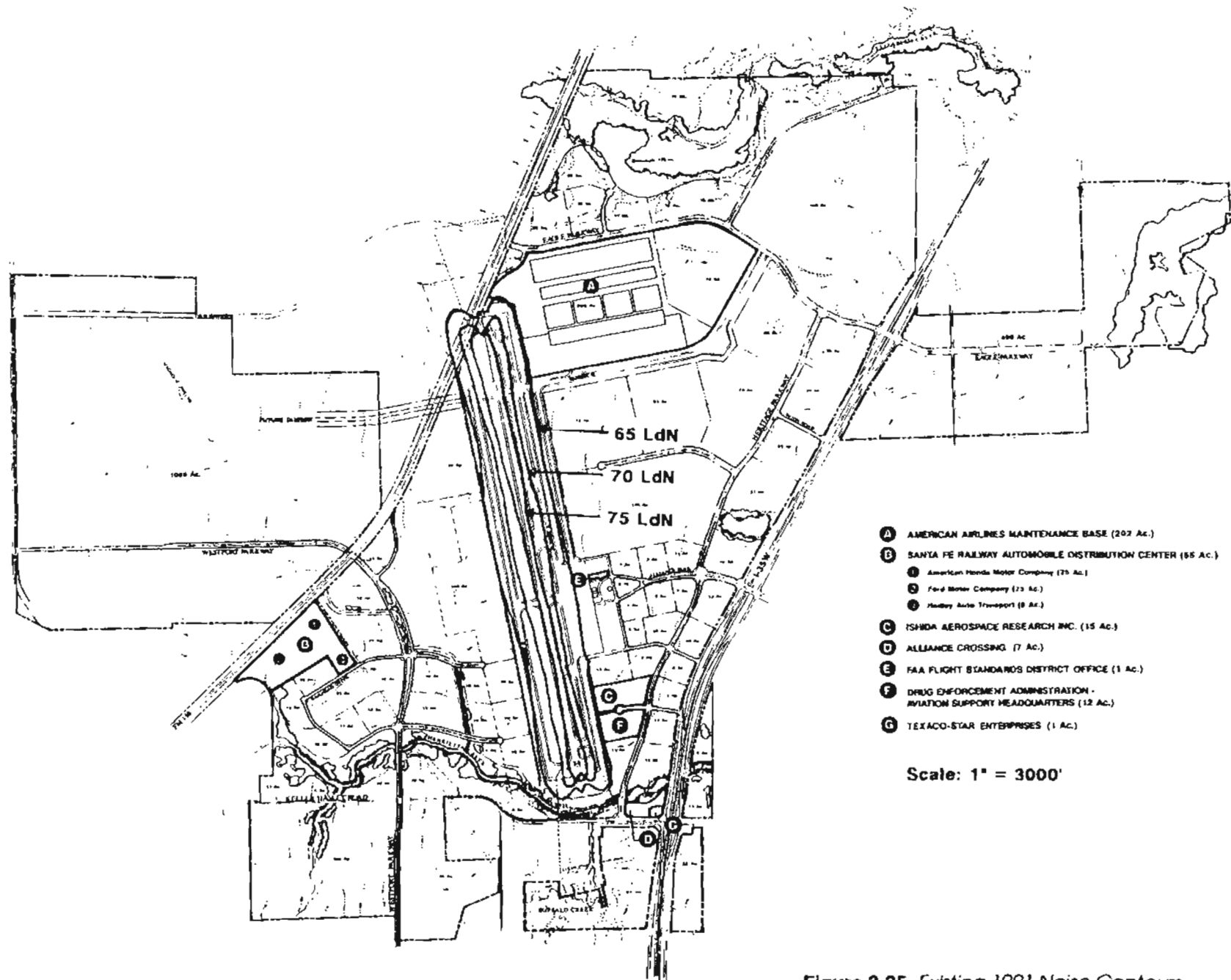


Figure 3-25 Existing 1991 Noise Contours - Alliance/Ft. Worth Airport

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mental concerns, community development, the transportation network and various other regional systems. Among other data collected there will be a series of inventories completed including one of airport activity data such as number of aircraft operations, fleet mix, passenger enplanements and air cargo activity. An inventory and analysis of surrounding land use (within a 5 mile radius of the airport) and relevant land use regulations and plans will also be conducted. It is anticipated that an airport-vicinity land use plan including general land use recommendations and recommended zoning, regulatory and policy tools, will be developed.

Air cargo facilities, operations, future development needs and forecasts are among the variety of analyses and inventories listed to be conducted. The Air Cargo Analysis (Section B4.6 of the Scope) outlines the full spectrum of factors to be studied pertaining to the existing and projected air cargo operations including facility needs for air carriers, all-cargo and/or small package carriers, and freight forwarders. Capacity analyses will be based on current and forecast cargo demand within a defined cargo market area. Three primary air cargo alternatives for the South Cargo Area are to be developed including: all-cargo air carrier operations facilities, air carrier aircraft maintenance facilities and meeting the long range needs of other aviation users. An Air Cargo/Commercial Terminal Area Plan is to be developed if a specialized cargo area is defined in the Airport Layout Plan. A variety of forecasts regarding air cargo operations to be developed include annual tonnage by type of carrier, all-cargo annual operations, all-cargo peak period operations and aircraft mix.

The Scope further notes that the FAR Part 150 Study is expected to develop draft baseline noise contours and project noise contours based on five year activity forecasts.

Huntsville International Airport, Huntsville, Alabama

Huntsville International Airport and its associated industrial park were completed in 1967. The airport is presently being managed by the Huntsville-Madison County Airport Authority. Also under the purview of the Authority are the International Intermodal Center and the Jetplex Industrial Park

which are also associated with the airport. Much of the available information regarding Huntsville can be found in the *Final Report, FAR Part 150 Noise Exposure Maps and Noise Compatibility Program Update, Huntsville International Airport, June 1991*, hereafter referred to as the **Part 150 Study**.

Huntsville International Airport is located in the City of Huntsville and is the only public airport serving the region including southern Tennessee and northern Alabama. The airport is twelve miles west of Huntsville's central business district. The airport is surrounded by the city of Huntsville to the west, east and south, by the City of Madison to the north, and by portions of the City of Triana to the south. The area immediately surrounding the airport is primarily undeveloped with a scattering of single family, multi-family, manufacturing and industrial uses. The most heavily developed area near the airport is to the northeast and it is comprised of commercial, industrial and manufacturing uses. At one time the area's manufacturing sector was dominated by the production of electric and electrical equipment in support of defense and space programs. In recent years the decline of these programs and related industries has shifted the industrial and manufacturing base of the region to private sector high technology and service oriented industries.

Huntsville is comprised of approximately 3,300 acres. Officials are currently discussing the possible acquisition of land on the west side of the airport for the purposes of land-banking the area in anticipation of future development. In addition to serving general aviation needs, Huntsville operations also include military aviation operations, air carrier operations and air taxi/commuter service which has steadily increased in operations since it was first introduced in 1982. Historical and forecast operations for Huntsville are presented in Table 3-9. The Part 150 study further notes that passenger and all-cargo airline hubbing is being aggressively pursued by the Huntsville-Madison County Airport Authority. The Authority anticipates that such hubbing would commence within a five year time frame after the Part 150 Study.

TABLE 3-9
Historical and Forecast Aircraft Operation, Huntsville,
1980-1993

	<i>Air Carrier</i>	<i>Air Taxi & Commuter</i>	<i>General Aviation^(a)</i>	<i>Military</i>	<i>Total Operations</i>
Historical					
1980	16,015	1,969	58,396	2,773	79,153
1981	13,970	1,054	57,163	3,327	75,514
1982	18,895	1,713	56,181	4,258	81,047
1983	19,677	3,133	56,190	5,383	84,383
1984	17,645	5,248	54,122	11,049	88,064
1985	12,329	10,034	32,524	3,899	58,786
1986	12,588	11,078	30,665	3,222	57,553
1987	13,619	14,229	32,113	3,628	63,589
1988	16,655	11,181	35,007	3,938	56,781
Forecast					
1993	19,600	12,800	39,600	4,000	76,000

(a) Includes airline training operations.

Source: *Huntsville International Airport FAR Part 150 Update, June 1991*

The impacts of future development on the surrounding communities will be varied due to the general lack of land use regulations and policies for the land immediately surrounding the airport. There are no comprehensive land use plans adopted for the cities of Huntsville, Triana or the surrounding unincorporated areas of Madison and Limestone counties. Huntsville does have an Airport Obstruction and Noise Exposure District around the airport to help regulate land uses in the vicinity. The other surrounding cities have no similar regulation and the unincorporated lands are governed by no land use regulations at all.

The International Intermodal Center at the airport was completed in December 1986 and was developed for the purposes of capturing the growing regional cargo market in order to increase the utilization of the airport. The Center provides services which include receiving, transferring, storing, and distributing containerized cargo which is primarily transferred by truck and rail. Despite the fact that truck/rail

cargo transport is the major cargo activity for the Intermodal Center a new air-cargo building was completed in 1989 to accommodate more air traffic. Expansion of this facility is currently underway. Some of the major all cargo tenants include Consolidated Freightways/Emery Worldwide, Burlington Northern and Panalpina/Cargolux.

There are two parallel runways, one is 8,000 feet and the other is 10,000 feet.

There are currently 10 freight forwarders and 7 air-cargo carriers operating at Huntsville International today. According to the FAA Study, the Intermodal Center handles about 8 million pounds of cargo annually, with more than 85 percent by weight carried by the all-cargo carriers. The 1991 Part 150 Study notes that Emery Worldwide operated two flights per day and Airborne operated one flight per day at the time of the study. Data regarding air cargo activity at Huntsville is presented in Table 3-10.

The Huntsville-Madison County Jetplex Industrial Park also provides services which compliment the cargo component. In addition to the many businesses and industries that are tenants of the Park there is also a U.S. Customs Center, and a Free Trade Zone.

The 1991 FAR Part 150 study aviation demand forecasts for 1993 were used to determine five year future noise exposure maps which were updated from the 1988 forecasts. Operations assumed in the Part 150 study were based on passenger and all-cargo airline hubbing operations. It was further assumed that there would be an average of 35 daily operations by 1993 of which 50 percent would occur during the day and 50 percent would occur at night. This information was based on similar all-cargo hubbing operations currently proposed at other airports. Existing noise contours for Huntsville as presented in the Part 150 Study are shown in Figure 3-26. The Part 150 Study notes that if the anticipated passenger and all-cargo airline hubbing commences as planned, the change in forecast levels regarding that hubbing would greatly increase the noise exposure footprint for the airport.

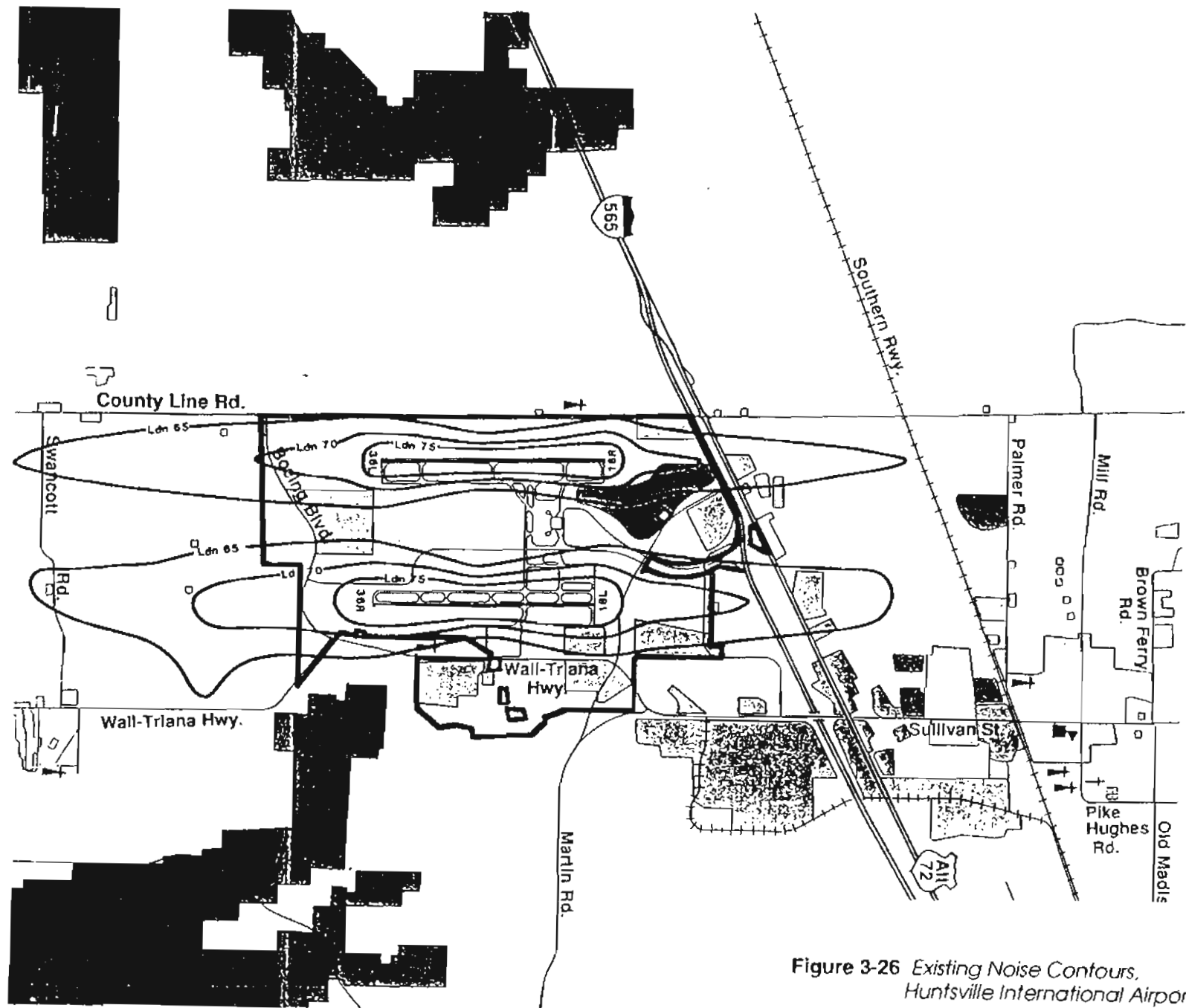


Figure 3-26 Existing Noise Contours,
Huntsville International Airport

TABLE 3-10
Historical and Forecast Air Cargo Activity, 1976-1993

	ENPLANED AIR CARGO (pounds)		
	Passenger Airlines ^(a)	All-cargo Airlines	Total
Historical			
1976	2,791,400	521,245	3,312,645
1977	2,449,800	595,023	3,044,823
1978	2,895,800	862,531	3,758,331
1979	2,280,600	884,467	3,165,067
1980	1,539,600	683,086	2,222,686
1981	1,530,600	334,537	1,865,137
1982	1,488,600	622,378	2,110,978
1983	1,787,000	901,412	2,688,412
1984	2,316,800	916,273	2,233,073
1985	1,421,800	1,225,282	2,647,082
1986	983,883	1,725,244	2,709,127
1987	1,282,512	5,051,163	6,333,675
1988	1,853,974	7,472,658	9,326,632
Forecast			
1993	2,500,000	10,600,000	13,100,000

(a) Data for cargo enplaned on passenger airlines from 1976-1985 are from Federal Aviation Administration, *Airport Activity Statistics of Certificated Route Air Carriers*, 1976-1985 editions.

Source: Huntsville International Airport FAR Part 150 Update, June 1991.

The FAR Part 150 Study outlines a comprehensive noise compatibility program consisting of nineteen short term measures (two noise abatement measures, two remedial mitigation measures, and fifteen preventative mitigation measures) as well as two long term remedial noise mitigation measures to commence in the first five years after the Study. In addition to the Part 150 Study, there is a master planning process presently underway.

Noise Considerations at NWIRP Calverton

Existing Conditions

Existing noise conditions at NWIRP Calverton are documented in the 1992 Air Installations Compatible Use Zones Study (AICUZ). Over a six year period between 1982 and 1987 Calverton averaged about 7,334 operations per year (See Table 3-11). Almost all of these were military operations and the great majority were jet operations. Many of these operations were *touch-and-go* training operations where a plane circles the airport, touches down and takes off again (see Table 3-12). Each touch and go counts as two operations: a take-off and a landing. Between 1987 and 1991 there was a steady decline in operations from 7,743 in 1987 to 5,137 operations in 1991 (see Table 3-13).

Figure 3-27 compares existing noise contours for 1987 and 1991. As can be seen from the map, the area covered by the significant 65 Ldn contour has receded and almost all of the 65 Ldn contour is contained within the boundaries of the airport and/or the adjoining reserve and cemetery properties. The 60 Ldn contour expands beyond the existing boundary in some locations, however this contour is not usually considered a sound level significant enough to interfere with most human activity. Most of the area affected by this contour generally contains land uses which are compatible with even higher noise levels. There are however several residential zones as can be seen in Figure 3-27. However these do not appear to be affected by the existing or projected 65 Ldn contour. This is true both of existing land uses and surrounding zoning.

SEL CONTOURS - SEL (Sound Exposure Level) contours are useful for comparison of single noise events. SEL is a measure of the total noise energy caused by a noise event such as an aircraft overflight. Both the duration and the fluctuating second-by-second noise levels of an event contribute to human perception of the noise. As a measure of total noise energy, SEL incorporates both of these factors, and thus allows for direct comparison of noise resulting from different aircraft operations.

TABLE 3-11
NWIRP Calverton Annual Operations, 1982-1987

Operator	Task	CALENDER YEAR						Six Year Average
		1982	1983	1984	1985	1986	1987	
Grumman	Development	431	303	236	1,290	820	1,503	764
	Support	355	156	8	35	240	422	203
	Production	1,100	1,202	1,231	935	870	533	979
	Operational	918	1,048	967	874	755	1,180	957
	Commercial Test	1,874	12	200	10	3	—	350
	ILS	97	—	—	—	—	2	17
	TACAN	80	26	14	—	56	27	34
	VOR	42	28	2	19	8	42	24
	E-2C Training	—	—	—	—	4,852	1,482	1,056
Navy	Production	986	761	703	620	605	619	716
	Test	207	—	—	6	64	7	47
	Training	2	52	28	2	560	140	47
	Deliveries	98	97	77	62	73	48	76
	Itinerants	222	211	150	135	176	280	196
	ILS	5	—	—	—	—	—	1
	VOR	—	5	2	3	—	71	14
	TACAN	4	8	7	5	14	16	9
	Test/Training	1,518	1,948	1,099	1,160	788	578	1,182
Military	Itinerants	63	14	22	10	19	13	24
	ILS	62	—	—	—	—	—	10
	VOR	18	42	4	71	12	22	28
	TACAN	48	52	20	54	14	32	37
	Experimental	31	—	—	—	—	—	5
Air Force	Support	8	—	—	—	—	—	1
	Development	—	—	—	—	—	2	0
	Pre-Inspection	—	26	16	—	—	—	7
	Itinerants	12	10	9	—	—	—	5
	EF-111 Production	103	162	238	203	—	—	118
Commercial	Deliveries	5	9	12	9	1	—	6
	Airline	22	11	—	—	—	—	6
	Training	62	30	14	44	16	84	42
	ILS	494	—	—	—	—	—	82
	VOR	135	92	28	26	37	243	94
	Itinerants	147	142	198	140	183	397	201
	Totals	9,149	6,450	5,285	5,713	9,662	7,743	7,334

Source: NWIRP Calverton AICUZ Update, August 1992.

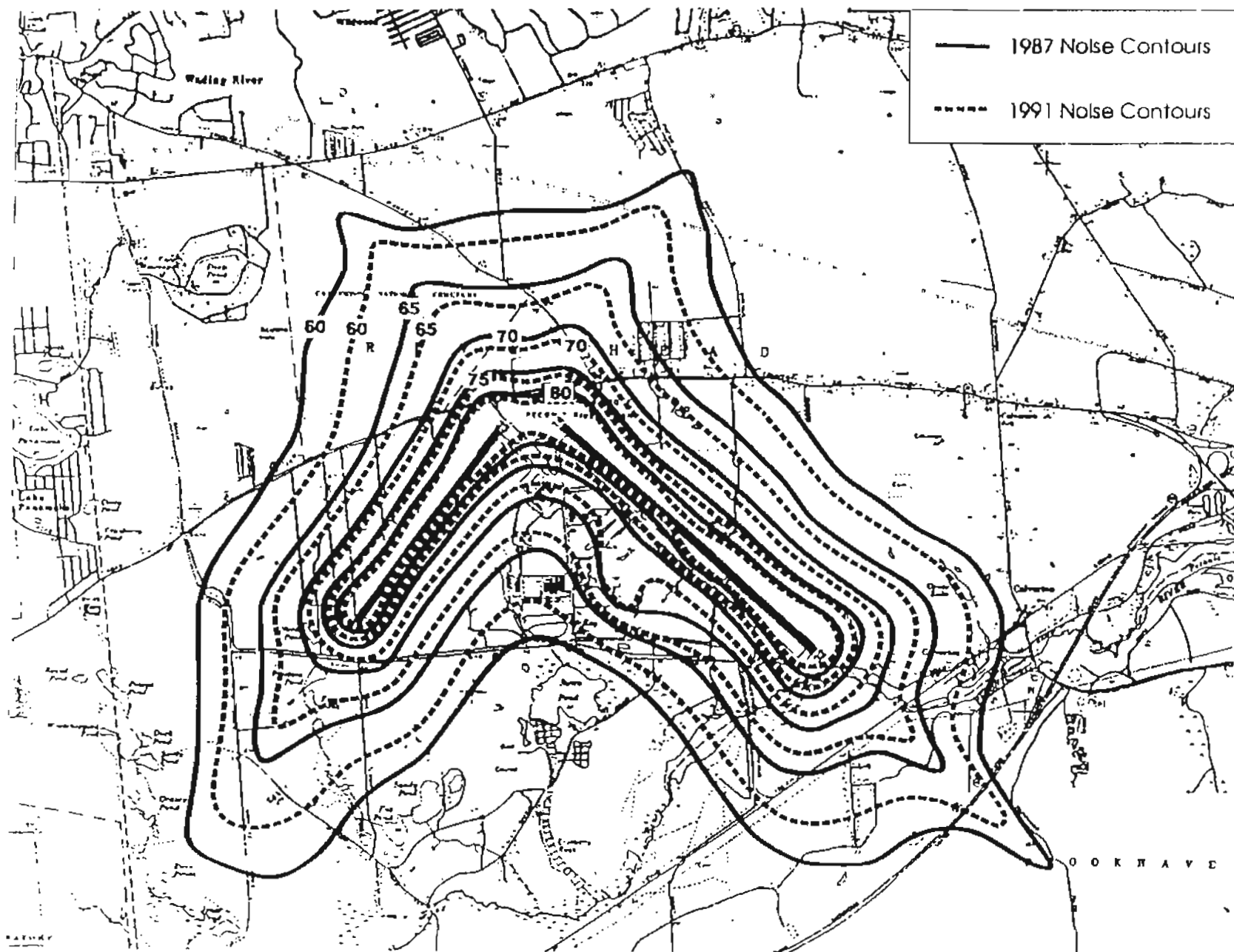


Figure 3-27 NWIRP Calverton 1987 & 1991 Noise Contours

TABLE 3-12
NWIRP Calverton Average Annual Test/Training Operations,
1982-1987

<i>Type of Operation</i>	<i>Number</i>	<i>Percentage</i>
Test/Training	2724	37%
All Other	4610	63%
Total	7334	100%

Source: NWIRP Calverton AICUZ Update, August 1992

TABLE 3-13
NWIRP Calverton Average Activity Trends, 1986-1991

<i>Year</i>	<i>Operations</i>	<i>Flights</i>
1986	9662	940
1987	7743	1194
1988	6503	1152
1989	6780	1352
1990	6596	1148
1991	5137	692

Source: NWIRP Calverton AICUZ Update, August 1992

Since SEL contours represent the noise from one relatively short noise event, it does not make sense to compare them to the Day-Night Average Sound Level (Ldn) Contours.

Figures 3-28 and 3-29 present the SEL contours for a 747 arrival and departure, respectively. As a basis for comparison, analogous SEL contours for an F-14A+ arrival and departures are presented in Figures 3-30 and 3-31. Arrivals to Runway 14 and departures from Runway 32 are depicted in the SEL contour figures. The contours may be rotated 180

degrees to fit over the opposite runway end, which would show arrivals to Runway 32 and departures from Runway 14.

The 90 decibel SEL level was chosen for illustrative purposes in these figures. Because the decibel level of the figures is the same, the figures may be overlaid to provide a fairly accurate representation of how the noise levels (as perceived from the ground) of single overflights of different aircraft types and operations compare. Within the 90 dBA SEL contour, instantaneous noise levels will reach a maximum in the neighborhood of 80 dBA for each overflight. Studies of outdoor to indoor noise attenuation have shown that inside a house with windows slightly opened, outdoor noises such as aircraft overflights are about 15 decibels lower. Closed windows reduce outdoor noise levels even further. Thus, within the 90 dBA SEL contour, maximum noise levels inside most homes will reach a maximum of about 55 to 65 dBA. At these levels, there is the possibility of interior speech interference and brief interruption of telephone conversations or television sound. For this reason, population counts within the 90 dBA SEL contour can serve as a comparative indicator of the number of people potentially disturbed by individual aircraft overflights.

Development Alternatives

There are presently three development alternatives under study. These are documented in Table 3-14.

None of the above alternatives envision any scheduled passenger service to the airport. All alternatives envision some type of low-level cargo service comprised of about one daily flight or two operations (one landing and one take-off). Stewart currently handles 3,223 all cargo operations annually or about 4 landings and 4 take-offs daily. If facilities at Calverton were to be modeled along the lines of those at Stewart then Calverton might experience about the same all-cargo operations levels. According to scenarios developed by the Long Island Regional Planning Board (LIRPB) the inclusion of an aircraft maintenance center could add as much as one flight per twenty day period of a B-727 or B-747 type aircraft to the operations at the airport.

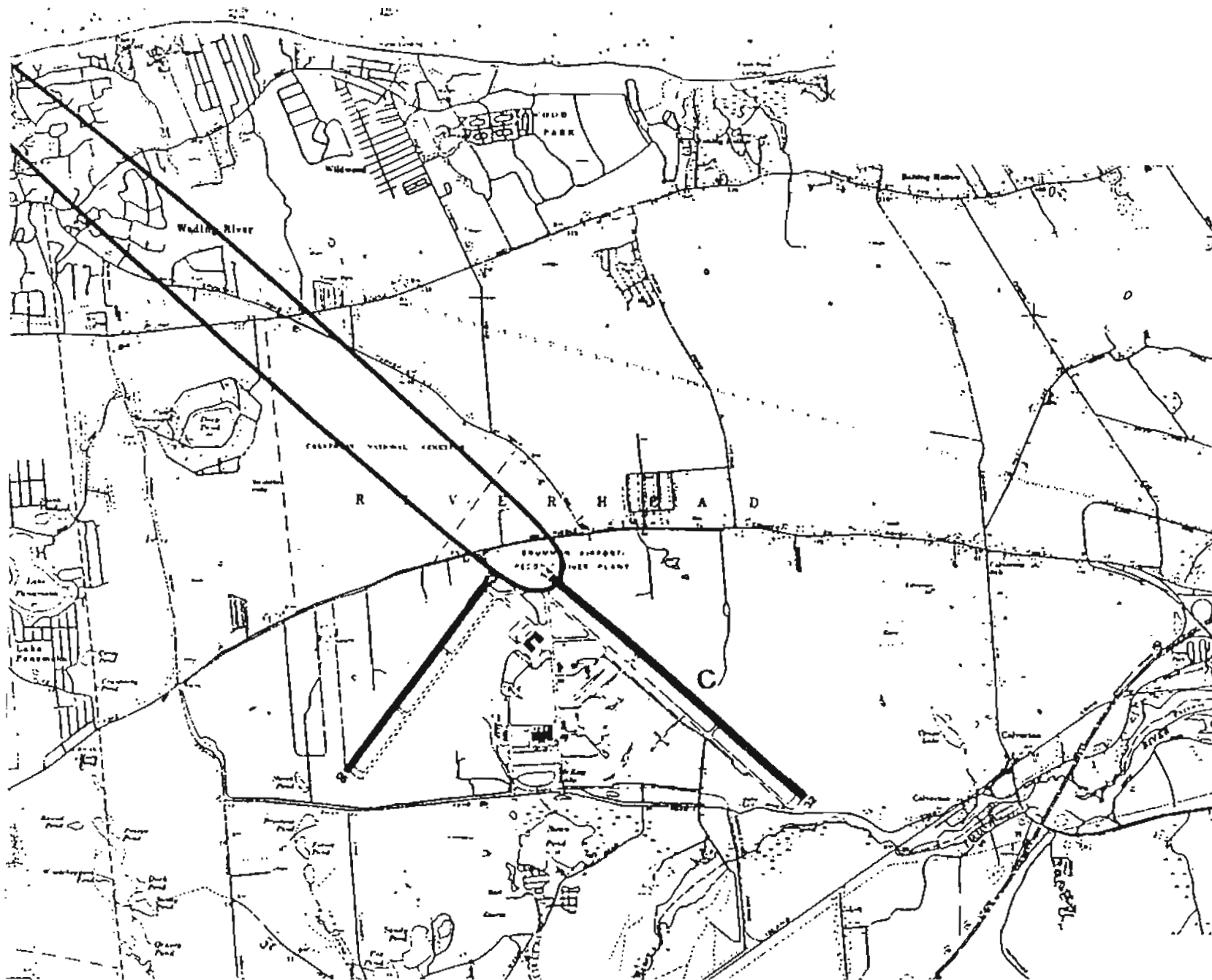


Figure 3-28 90 dB SEL Contour for a 747 Arrival

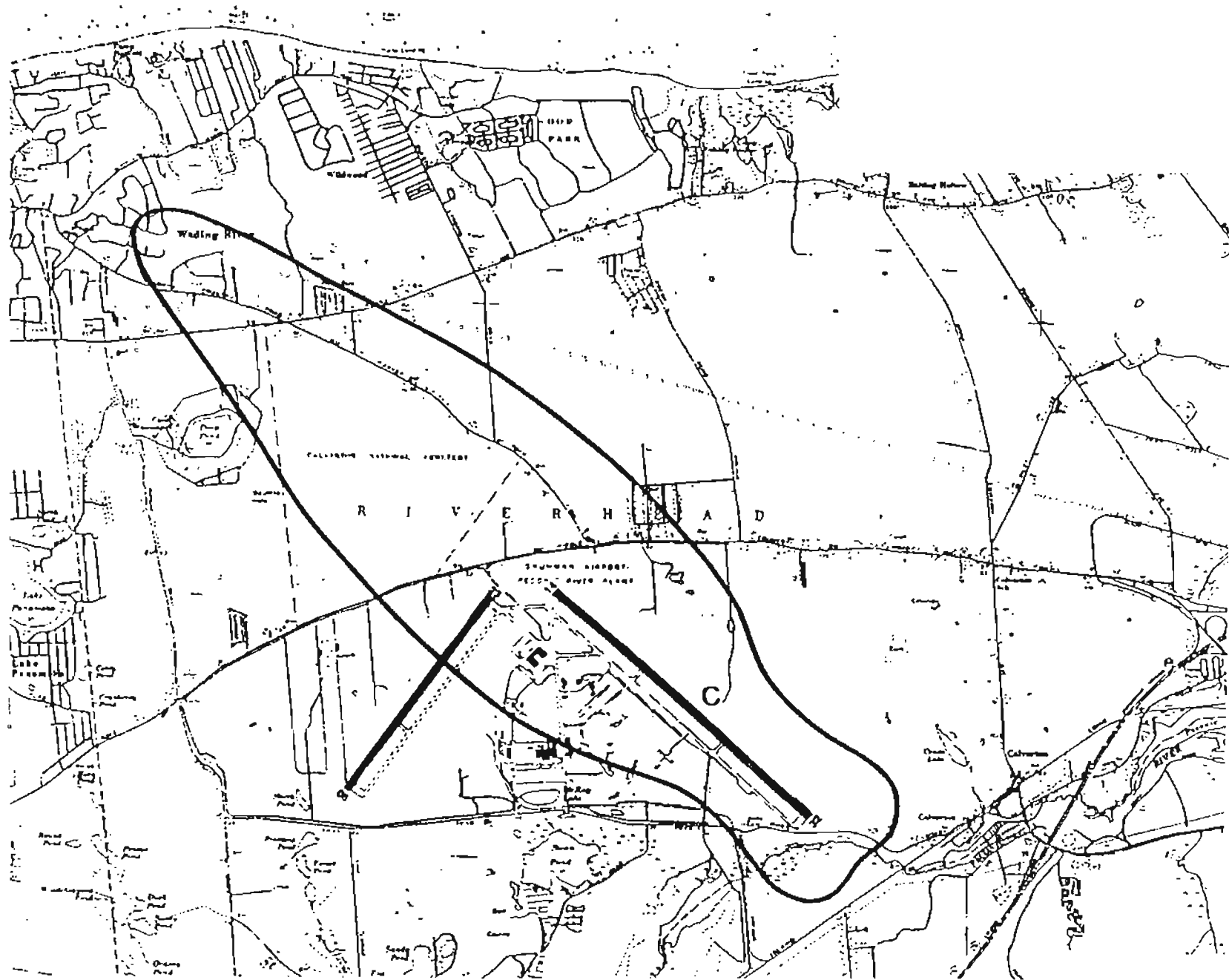


Figure 3-29 90 dB SEL Contour for a 747 Departure

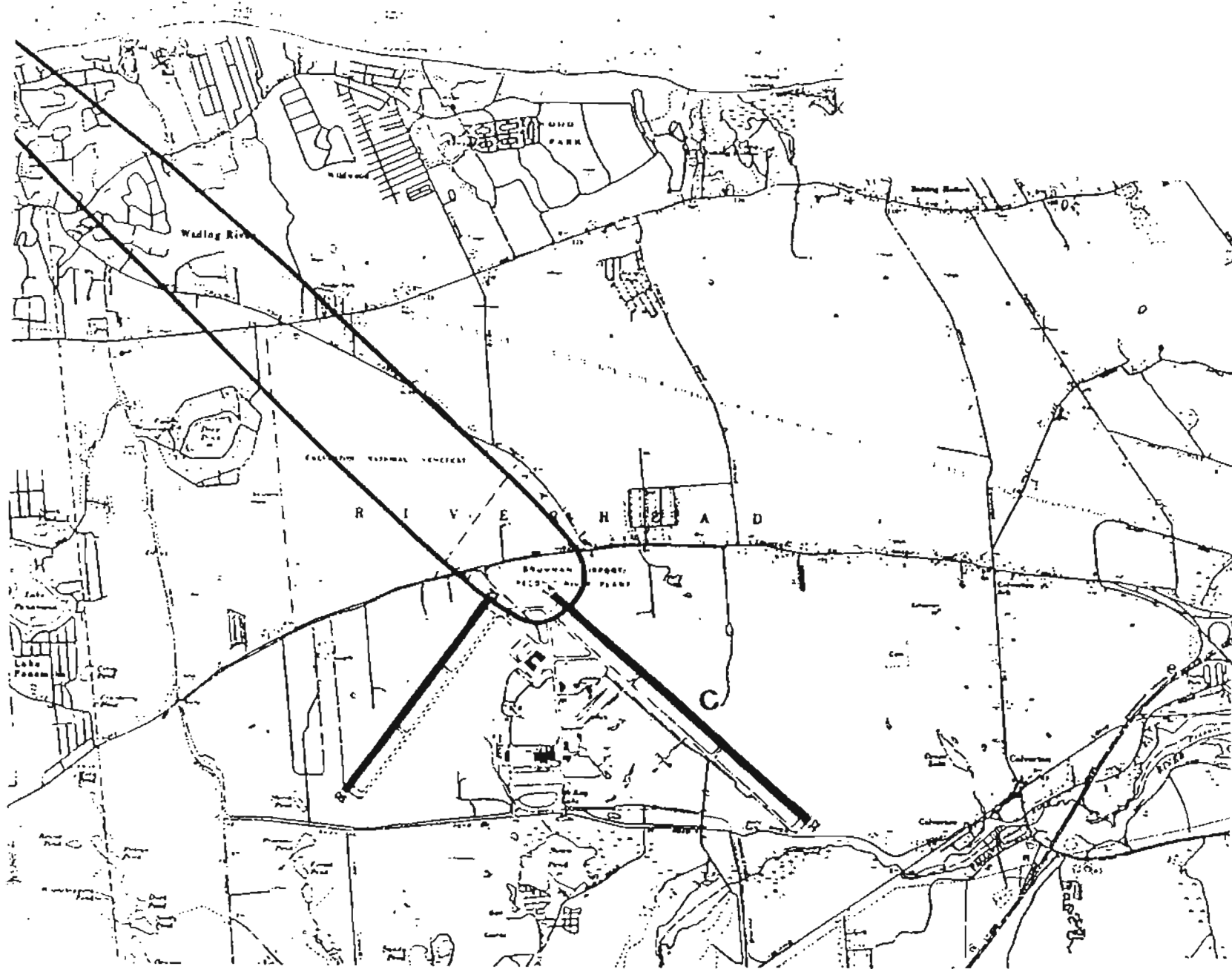


Figure 3-30 90 dB SEL Contour for a F-14A+ Arrival

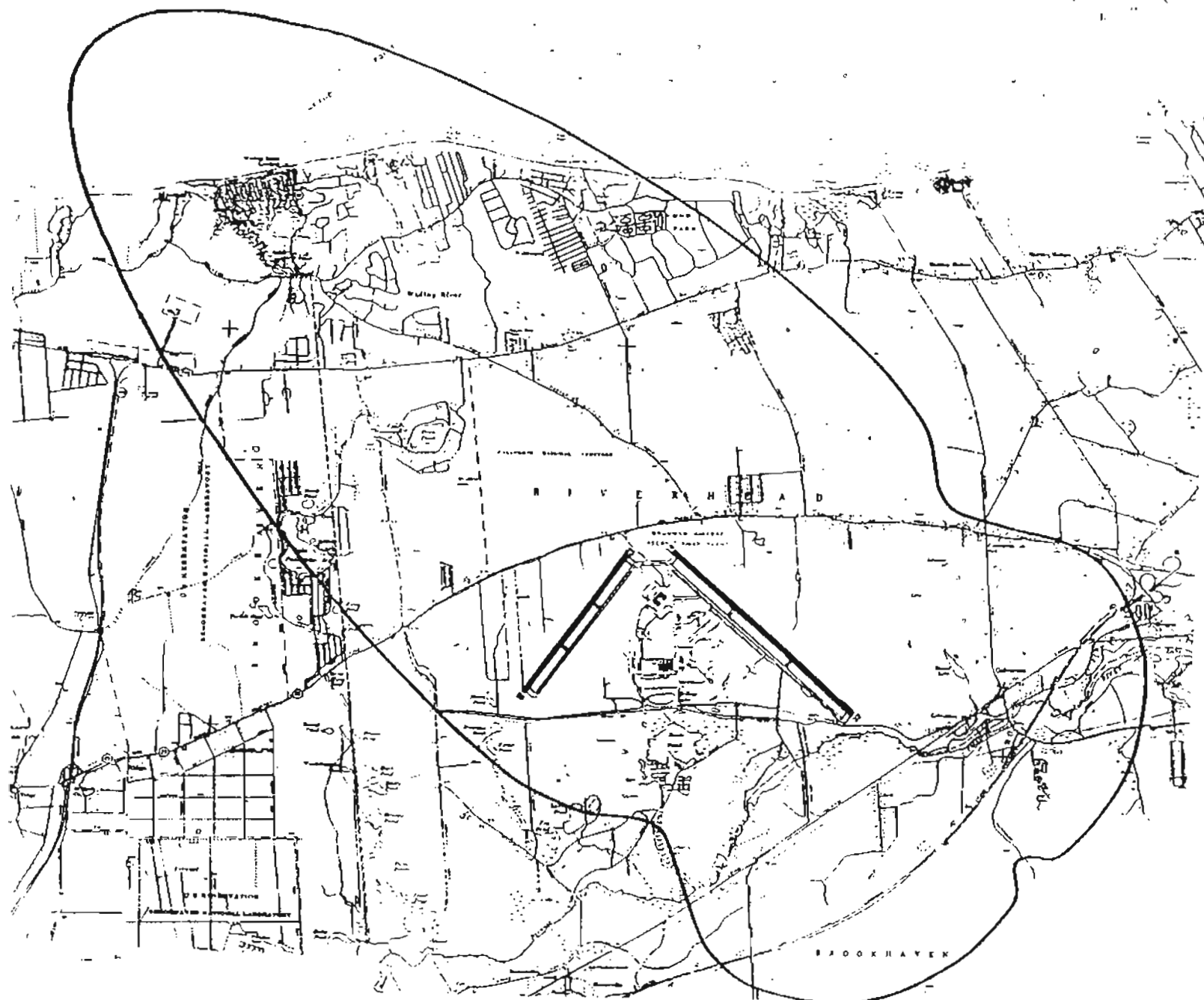


Figure 3-31 90 dB SEL Contour for a F-14A+ Departure

TABLE 3-14
Development Alternatives

<i>Development Alternative</i>	<i>Elements</i>
Alternative 1	Airport Management Fixed Base Operator Air Cargo Industrial Park Foreign Trade Zone
Alternative 2	Airport Management Fixed Base Operator Air Cargo Industrial Park Aircraft Maintenance
Alternative 3	Airport Management Fixed Base Operator Air Cargo Industrial Park Aircraft Maintenance Foreign Trade Zone

In all aviation-related alternatives it is envisioned that existing levels of military and Grumman operations will continue at the airport. If the commercial enhancement alternatives under study prove to be viable at these projected low operations levels, it is still likely that some alteration of the existing noise contours will occur. However, it seems unlikely that the addition of approximately 730 and 754 operations per year of commercial jet aircraft will dramatically alter existing and projected cumulative noise levels to the extent that large changes in the area covered by the contours will occur, particularly if existing levels of military jet operations are continued in the future. Nonetheless, these alternatives should be modeled using the proper inputs and INM or other accepted noise mapping techniques. Additionally, the characteristics of these alternatives may be different than existing conditions and should be carefully assessed, particularly in this rural environment. This would be particularly true if operations were initiated today since many cargo aircraft tend to be of the Stage 2 variety and sometimes operate at night. However, in light of the necessity of potential aviation activity having to construct all the operational and support facilities from the ground up, it is possible that the deadline for the quieter Stage 3 aircraft may be reached prior to initiation of cargo operations although this cannot in be guaranteed.

If Calverton more closely parallels Stewart then the number of jet operations related to cargo and maintenance could grow to as much as 3,000 or more on an annual basis which

could have some effect on noise patterns at the airport. A preliminary analysis of these potential alternatives (discussed below) appears to indicate that the noise impacts of the alternatives under consideration will be minimal. This is largely due to the fact that typical commercial jet operations often have relatively less area of SEL impact than military aircraft operations.

Analysis of Alternatives

A preliminary analysis of three alternatives was conducted by the Long Island Regional Planning Board (LIRPB) working with Harris, Miller, Miller & Hanson, Inc. (HMMH) and using Noise Map 6.1 modeling technology. This technology was decided upon because of the extent of database already developed in this format for the previous AICUZ studies of Calverton.

The results of this analysis are contained in NWIRP Calverton, *Grumman/Peconic River Airport: Noise Contours, December 11, 1992*, prepared by Harris Miller Miller & Hanson, Inc. Report No. 292420 (HMMH Report). At the request of the LIRPB, Gillham & Gander Associates, Inc., has reviewed this document and finds that it is consistent with the proposed alternatives and meets contemporary noise analysis standards. Principle findings are reproduced below.

The 1987 Ldn contours prepared by HMMH as part of an Aircraft Noise Survey for the U.S. Navy served as a basis for determining existing Ldn levels at NWIRP Calverton. *HMMH Report No. 270136, dated April 1989*, fully documents the preparation of those contours. In that study, detailed analyses were completed to determine the set of operational inputs to the noise model. The required operational inputs include the following:

- level and mix of aircraft operations,
- day-night split of operations (by aircraft type),
- physical description of the airport layout,
- location, heading, duration, and frequency of engine ground runups,
- runway utilization rates,
- prototypical flight track descriptions, and
- flight track utilization rates.

All of the above listed variables were assumed to remain constant from 1987 to 1991, except for the level of aircraft operations, which dropped from a total of 7743 in 1987 to a total of 5137 in 1991. Applying a simple scale factor of 66.4 percent (5137 divided by 7734) to all flights in the 1987 input file produced a set of data which is reasonably representative of existing conditions in 1991. (Overall, this uniform reduction of operations produces a 1.8 decibel reduction in Ldn, since $10 \times \log\{66.4 \text{ percent}\} = 1.8$). The 1987 modeled aircraft fleet mix (and thus, the 1991 existing conditions fleet mix) consists of F-14A, F-14A+, A-6E/F, and E-2C aircraft. Figure 3-28 is a comparison of the resulting 1991 existing conditions contours with the 1987 contours. (The original 1987 contours were calculated using NOISEMAP, version 5.2. The 1987 contours shown in Figure 3-27 have been recalculated using NOISEMAP, version 6.1). The 1991 contours are depicted with dotted lines.

Three alternatives containing different levels of additional activity were examined. For each alternative, all additional aircraft operations were modeled as daytime flights, i.e., between 7:00 am and 10:00 pm. The different alternatives are as follows:

TABLE 3-15
Levels of Additional Activity Alternatives

<i>Alternative</i>	<i>Elements</i>
Alternative 1	Add One Cargo Aircraft Arrival and Departure per Day
Alternative 2	Add One Cargo Aircraft Arrival and Departure per Day and One Aviation Maintenance Arrival and Departure per Month
Alternative 3	Add Four Cargo Aircraft Arrivals and Departures per Day and One Aviation Maintenance Arrival and Departure every Ten Days

The Boeing 747 was chosen to represent the typical cargo aircraft and the Boeing 727-200 was chosen to represent the aircraft flown in connection with Aviation Maintenance business. Standard noise and performance data for both of

these aircraft types were extracted from the FAA's Integrated Noise Model (INM) database, version 9. Of the several 747 and 727-200 aircraft in the database, the loudest on departure close-in to the airport, the 747-200B and the 727-200 with JT8D-17 engines, were chosen for this noise model.

All arrival and departure flights by these additional aircraft were modeled with straight flight tracks. The 747-200B was assumed to use only the longer of the airport's two runways, Runway 14/32, and was modeled using each runway end 50 percent of the time. The 727-200 would be able to use either runway, and so was modeled with the same runway usage rates as were applied to the 1987 Grumman flights, listed below:

<i>Runway End</i>	<i>Percent Use</i>
05	12%
23	26%
14	23%
32	39%

The resulting Ldn contours for each alternative are shown in Figures 3-32, 3-33, and 3-34. To demonstrate the degree of change from the 1991 existing conditions, Figures 3-35, 3-36, and 3-37 show the contours for each alternative superimposed on the 1991 existing conditions contours. In each of these figures the existing conditions contours are depicted with dotted lines.

Observation of Figures 3-35 through 3-37 reveals only small changes in Ldn from 1991 existing conditions as a result of the additional flights for any of the alternatives. Alternatives 1 and 2 produce virtually identical Ldn contours, leading to the conclusion that the difference between the two alternatives, the additional monthly 727 arrival and departure (0.033 daily arrivals and departures) has essentially no effect on Ldn. In general, neither Alternative 1 nor Alternative 2 produces a change of more than 1 decibel Ldn in any area over the 1991 existing conditions. The area of largest increase in Ldn (about 1 dB) can be seen in Figures 3-35 and 3-36 as the gap between the southeast tips of the Ldn 60 contours.

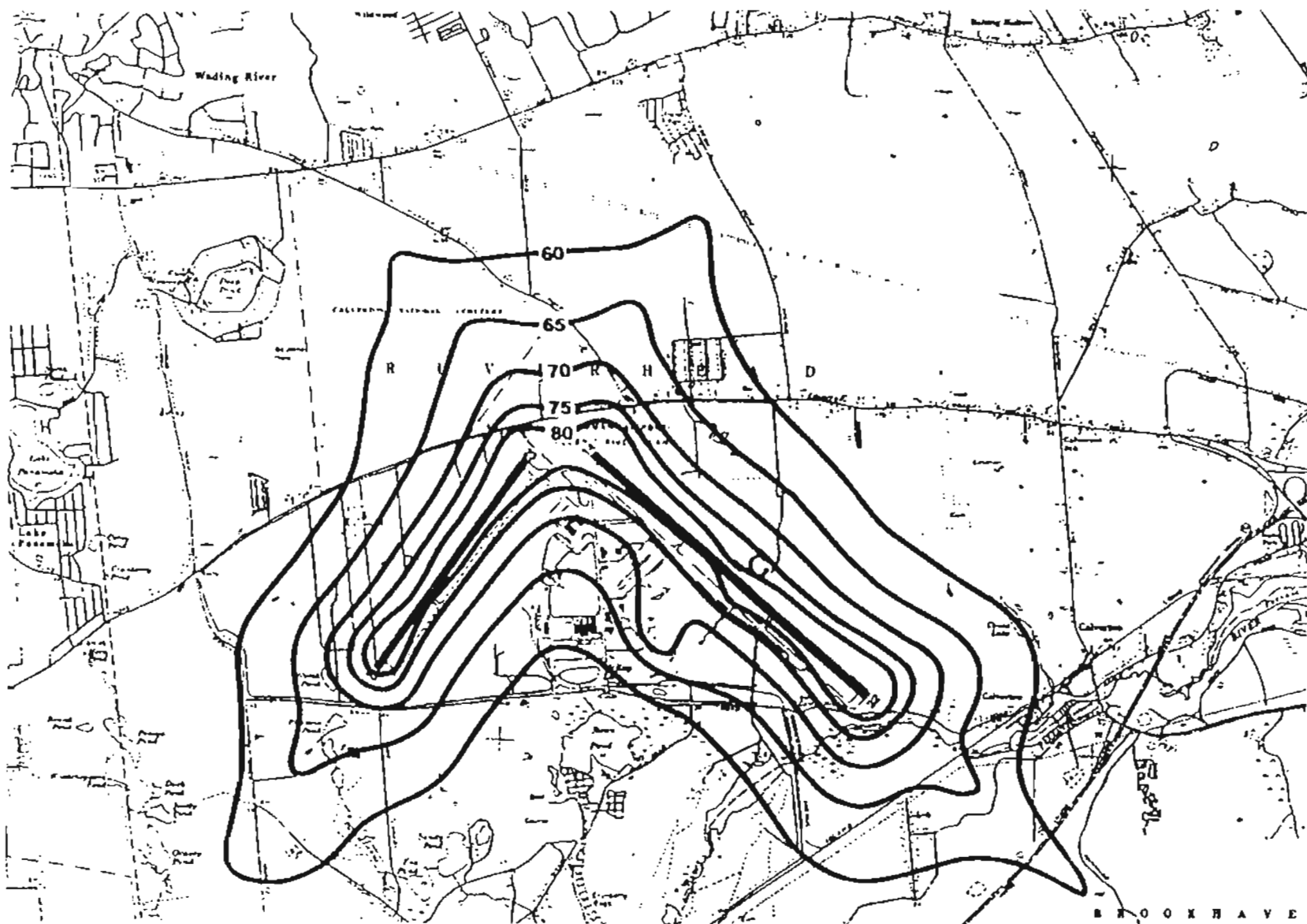


Figure 3-32 Alternative 1 Ldn Contours

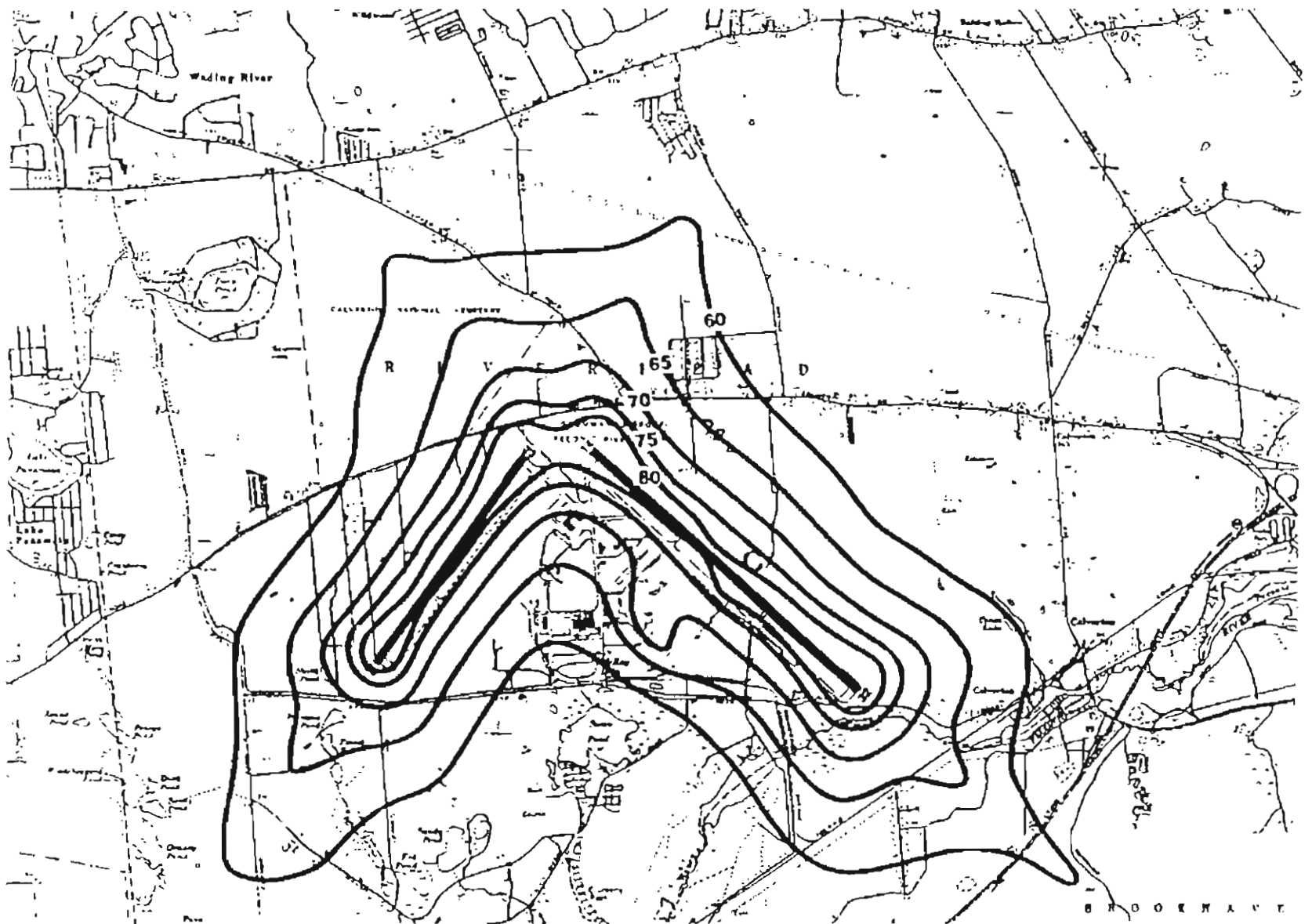


Figure 3-33 Alternative 2 Ldn Contours

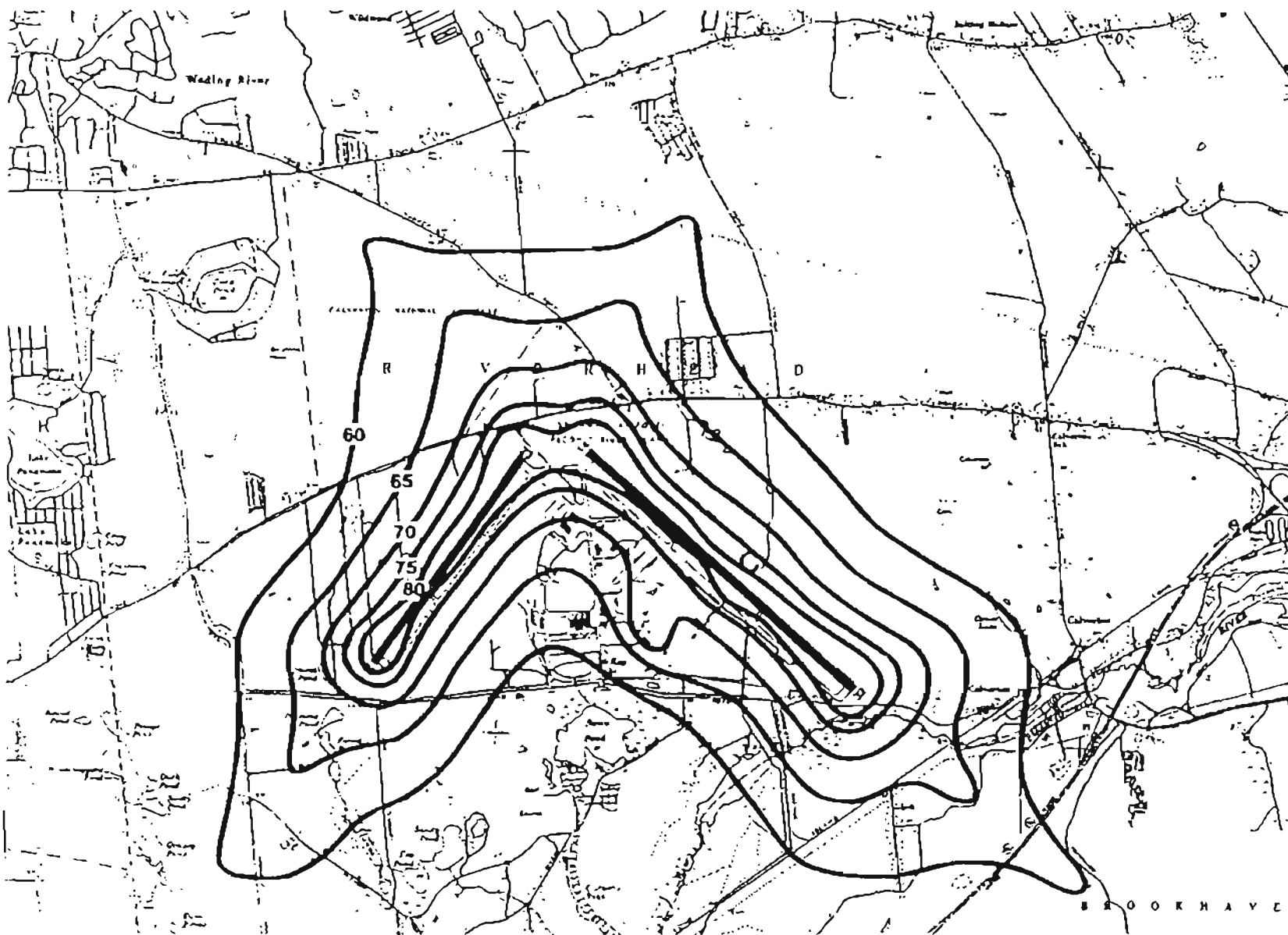


Figure 3-34 Alternative 3 Ldn Contours

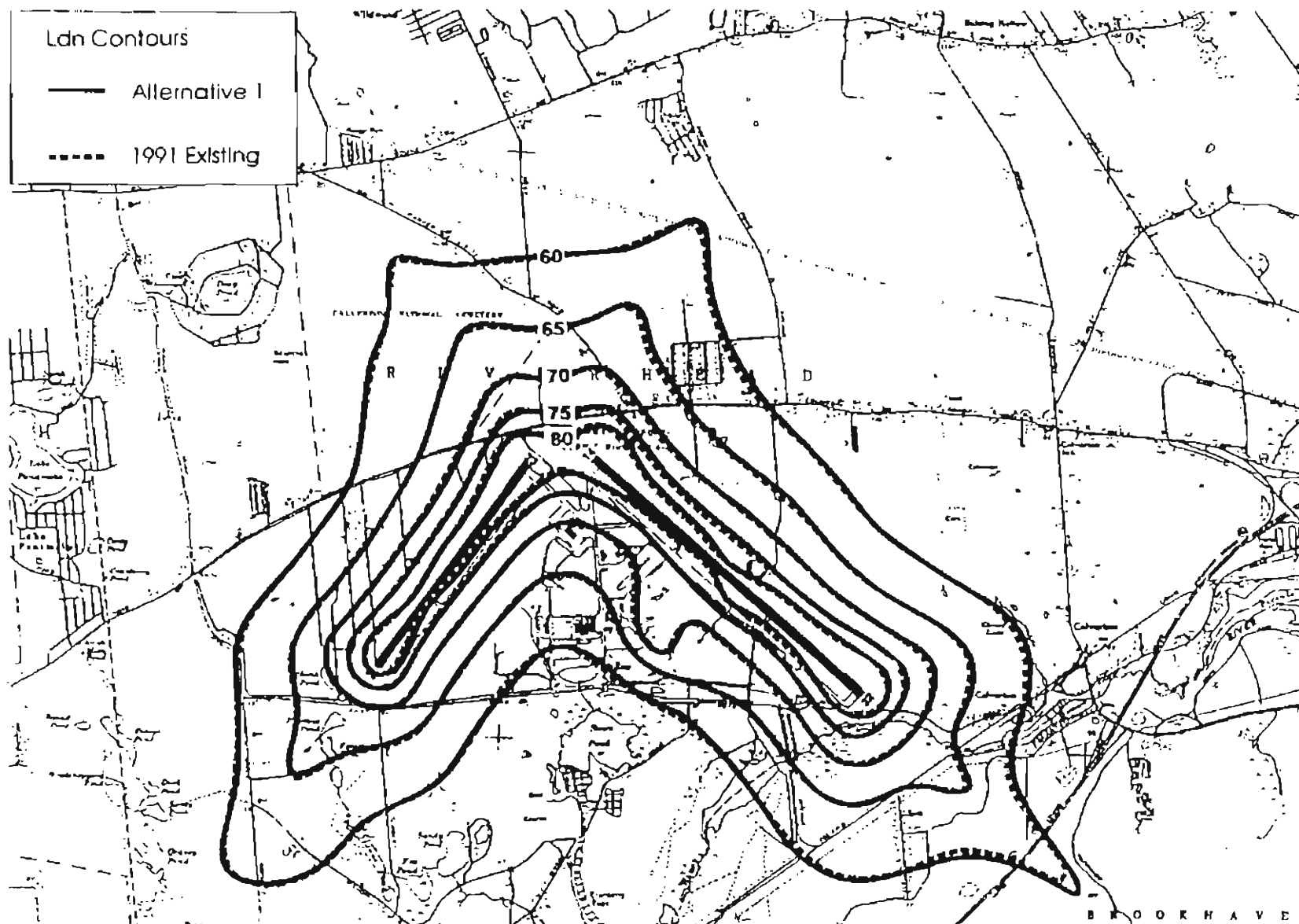


Figure 3-35 Alternative 1 Ldn Contours
as Compared to 1991 Existing Conditions

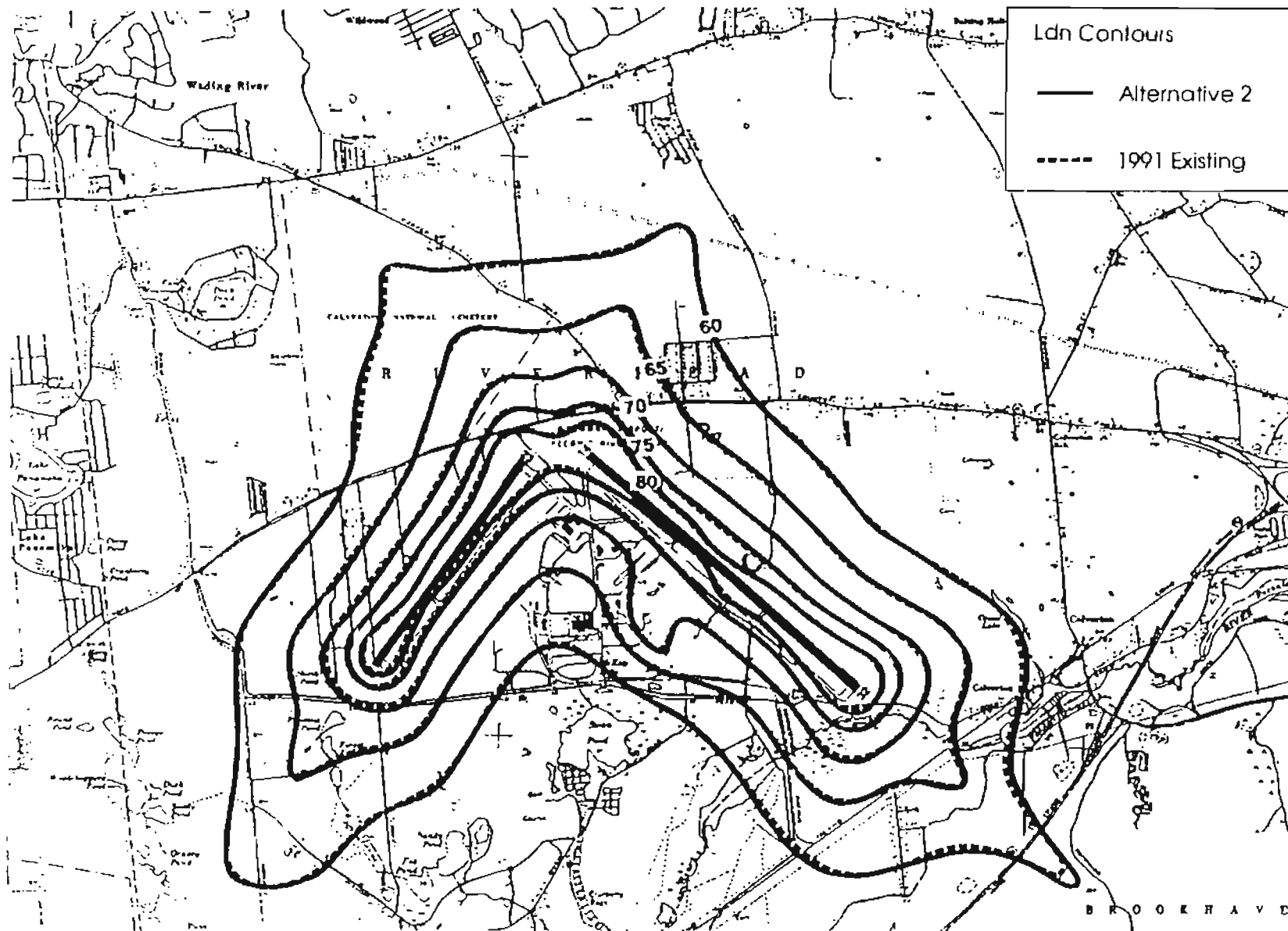


Figure 3-36 Alternative 2 Ldn Contours
as Compared to 1991 Existing Conditions

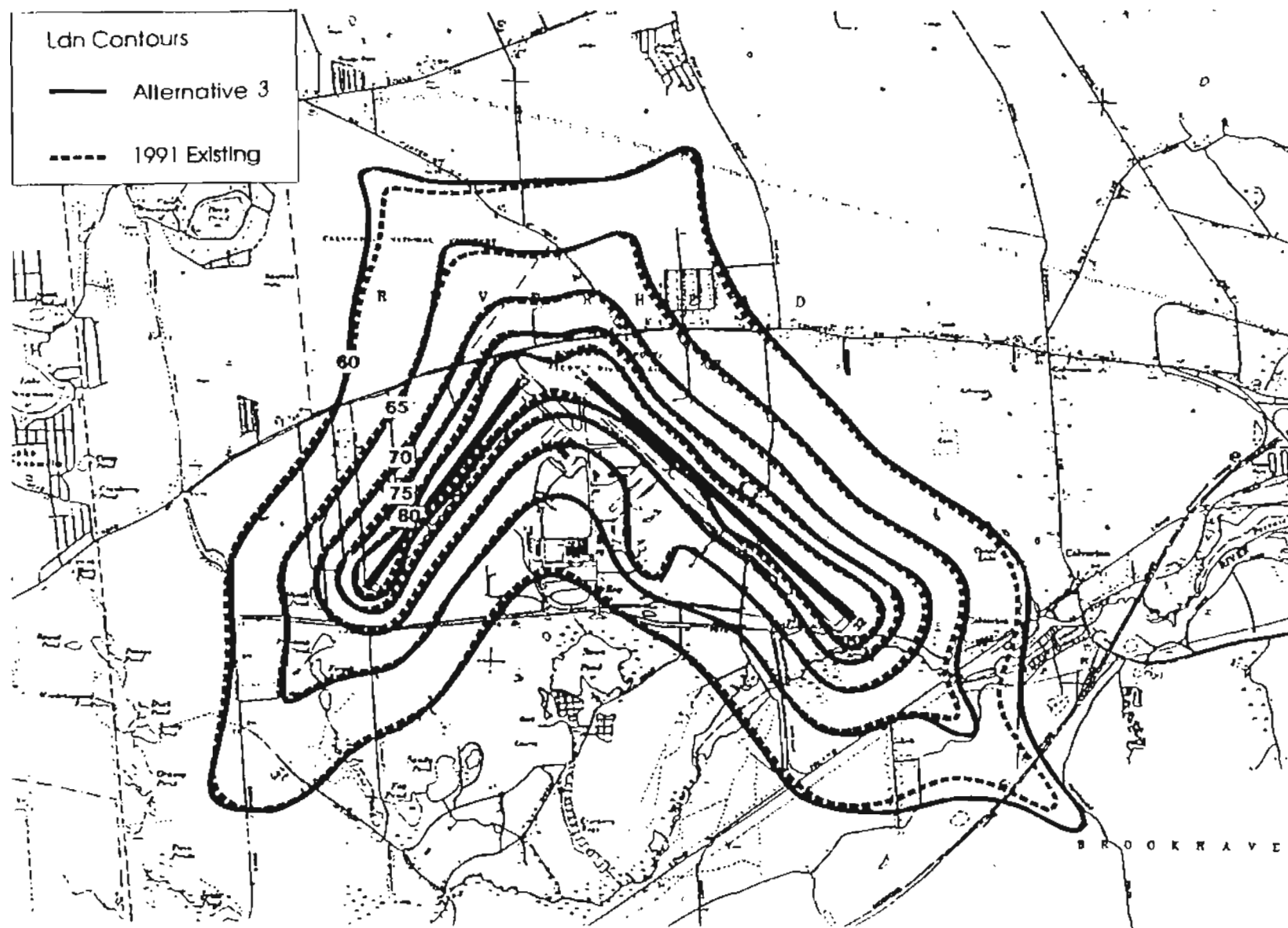


Figure 3-37 Alternative 3 Ldn Contours
as Compared to 1991 Existing Conditions

As expected, Alternative 3 shows the most change from the existing conditions, as seen in Figure 3-37, since that alternative adds the most aircraft operations. The changes off either end of Runway 14/32 are largely attributable to the additional four 747 daily arrivals and departures. The slight changes off the ends of Runway 05/23 show that the 727 operations, increased to an arrival and departure every ten days (0.1 daily arrivals and departures), do begin to affect Ldn.

Noise Mitigation and Land Use Compatibility Strategies

As can be seen from the preceding discussion, noise and land use are very closely linked. Noise is generally considered to have a negative impact only if the uses and activities under the noise are incompatible with existing and/or projected noise levels.

The preceding analysis indicates that the increase in Ldn contour area due to implementation of any of the three alternatives is likely to be quite minimal. Contours resulting from the alternatives comprise less area than the 1987 contours and the 65 Ldn contour is largely contained within the airport boundary and reserve areas. Nonetheless, some residential areas to the northeast and southeast of the airport may be affected and noise mitigation measures should be considered.

Opportunities for achieving or assuring noise compatibility surrounding the airport include both airport proprietor options as well as state and local government actions.

The matrix in Table 3-16 has been reproduced from the FAA's Advisory Circular: *Noise Control and Compatibility Planning for Airports*. The matrix shows an array of possible solutions to a cross section of noise compatibility problems.

The most direct airport proprietor approach may be configurational and/or operational. Operational methods can include preferential runway usage and curving approach and departure tracks away from sensitive areas. Noise can also be reduced through regulatory procedures such as full or partial curfews, restriction of aircraft not meeting Federal

noise standards, landing fees based on noise emissions, regulations for carriers which limit cumulative noise impact or the percentage of operations of certain aircraft types according to certificated noise levels (such as Stage 2 aircraft), and other rule-making procedures.

Other methods which can involve both the airport proprietor as well as state and local government include land or easement acquisition to provide buffer areas and/or avigation easements, use of local zoning to regulate out incompatible uses or development incentives to encourage compatible development of noise impacted areas such as transfer of development rights or TDR's. Capital improvements projects can also be used as a method of achieving noise compatibility by locating noise compatible public works projects or uses in noise affected areas such as maintenance and equipment storage, etc. Other methods can include purchase and resale of land with covenants assuring compatible use of the land. Lastly, purchase assurance and/or sound proofing programs can be put into effect for existing and remaining residential uses affected by the projected noise contours.

Another option to be considered should this study progress beyond the feasibility stage is a FAR Part 150 planning program which directly addresses airport noise and land use compatibility. The FAR Part 150 program includes:

- provision for submission to the FAA of Noise exposure maps and noise compatibility programs,
- standard noise measurement methods,
- identification of compatible and incompatible land uses, and
- procedures/criteria for FAA approval/disapproval of recommended compatibility programs.

Typical Part 150 studies are expected to involve substantial local consultation and citizen participation. Studies typically establish existing and projected noise exposure maps for the airport together with an inventory of existing land uses and zoning controls. The planning study then may set forth a series of potential alternatives for bringing land use and noise exposure into compatibility. Options may include

TABLE 3-16
Matrix of Noise Control Actions

<div> <div>Consider These Actions ▼</div> <div>If You Have This Problem ►</div> </div>			Noise from: Taxiing	Departure	Approach	Landing Roll	Training Flights	Maintenance	Ground Equipment
Airport Plan	Changes in Runway Location, Length or Strength	1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
	Displaced Thresholds	2			<input type="radio"/>		<input type="radio"/>		
	High-Speed Exit Taxiways	3	<input type="radio"/>			<input type="radio"/>			
	Relocated Terminals	4	<input type="radio"/>					<input type="radio"/>	<input type="radio"/>
	Isolating Maintenance Runops or Use of Test Stand Noise Suppressors and Barriers	5	<input type="radio"/>					<input type="radio"/>	<input type="radio"/>
Airport and Airspace Use	Preferential or Rotational Runway Use*	6	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
	Preferential Flight Tract Use or Modification to Approach and Departure Procedures*	7		<input type="radio"/>	<input type="radio"/>		<input type="radio"/>		
	Restrictions of Ground Movement of Aircraft*	8	<input type="radio"/>						
	Restrictions on Engine Runups or Use of Ground Equipment	9						<input type="radio"/>	<input type="radio"/>
	Limitations on Number or Types of Operations or Types of Aircraft	10	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Use Restrictions Rescheduling Move Flights to Another Airport	11	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Raise Glide Slope Angle or Intercept*	12			<input type="radio"/>		<input type="radio"/>		
Aircraft Operation	Power and Flap Management*	13		<input type="radio"/>	<input type="radio"/>		<input type="radio"/>		
	Limited Use of Reverse Thrust*	14				<input type="radio"/>			
Land Use	Land or Easement Acquisition	15	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Joint Development of Airport Property	16	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Compatible Use Zoning	17	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Building Code Provisions and Sound Insulation of Buildings	18	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Real Property Noise Notices	19		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Purchase Assurance	20		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Noise Program Management	Noise-Related Landing Fees	21	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>		
	Noise Monitoring	22		<input type="radio"/>	<input type="radio"/>		<input type="radio"/>	<input type="radio"/>	
	Establish Citizen Complaint Mechanism Establish Community Participation Program	23	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Source: FAA AC 150/5020-1.

airport operational changes as well as changes or modifications to surrounding land use patterns.

Airports can also have other land use impacts including induced development impacts to the surrounding area. An important consideration with regard to induced development is the potential for new induced development to assist in assuring future noise compatibility around the airport. This can be done through land or easement acquisition and through rezoning to create new areas for induced commercial and light industrial uses in noise affected areas perhaps even including noise reduction requirements for new construction. Locally a Part 150 study has recently been completed for MacArthur Airport in Islip. There a variety of possible measures have been suggested. These include, among other elements:

- Departures controls
- Preferential runway use
- Nighttime use and run-up restrictions
- Limiting touch-and-go operations
- Residential sound insulation program
- Purchase of aviation easements
- Land use (zoning) controls
- Noise berms along the property line of the airport

Some of these kinds of measures could be used at Calverton. However, at Calverton the surrounding land is much less developed. Thus, measures which may have the most impact at Calverton should be those related to controlling future use of surrounding lands. Measures along these lines might include:

- Zoning controls to maintain or consolidate existing industrial zoning or put in place new industrial and/or agricultural zoning. (However, expansion of industrial use in this area may have to be weighed against potential impacts to ground water quality on this sensitive aquifer.)
- Purchase of additional surrounding lands to reserve more undeveloped open space.

- Open space conservation zoning and/or multi-acre zoning and transfer of development rights to other targeted development sites away from the airport

Other measures might include:

- Departures controls and preferential runway use.
- Nighttime use restrictions on commercial aircraft
- Residential soundproofing where appropriate
- Noise berms to buffer noise from aircraft maintenance.

Actions Following the Feasibility Study

If the alternatives currently under study prove to be feasible, then a more rigorous environmental analysis of the sound effects of the various alternatives should be carefully undertaken together with consideration of submitting an FAR Part 150 application to the FAA. This will very likely be required as part of a Federal Environmental Assessment process. Such a study should include at a minimum:

- Additional measurement to refine existing noise level data and characteristics at Calverton.
- More detailed forecasts of operations levels for the various alternatives.
- Incorporation of any revisions to the forecast of fleet mix needed to support each alternative.
- More detailed analysis of probable runway utilization.
- Projected aircraft flight paths and vertical profiles.
- Modeling of alternate day/night split of operations.

This data should be combined with existing and projected data on military/Grumman operations at the airport in order to derive a revised set of projected noise contours for each alternative under study. These contours should be combined with an analysis of likely SEL characteristics of each of the alternatives. Contours and SEL analysis can be combined with existing land use and zoning data in order to make estimates of likely noise impacts and to recommend potential mitigation measures.

CHAPTER FOUR

Land Uses and Transportation

One important concern in the use of Calverton for non-military activities is what will the impact of such use be on the quality of life in the surrounding communities and will there be conflict with land use planning in the Towns of Riverhead, Brookhaven, and Southampton? The three key parameters are noise, traffic and whether or not airport activities will cause a change in land uses off-site.

In Chapter Three an examination of the noise profiles clearly demonstrate that commercial flights produce significantly reduced profiles in comparison with non-noise attenuated aircraft such as the F-14. However, the issue of noise must also be considered in the context of frequency of flights and the time of day or night that flights occur.

The site alternatives discussed in Chapter Five, which served as the determinant of job generation possibilities in Chapter Two, show that the anticipated number of flights will be less than the past history of military usage and will be in more quiet aircraft. Therefore, whatever impact the airfield has had on the quality of life in eastern Long Island over the past four decades will not be increased, but decreased.

This claim is based on the conclusion that the property will not be used for passenger operations, either as a wayport or as a Suffolk County International Airport. The reasons that mitigate against passenger operations are discussed in Chapter Five.

This Chapter examines the general existing land uses in the PSA, and Suffolk County and town comprehensive plans as they relate to Calverton Airfield. The balance of the Chapter will address the traffic that may be generated by job growth at the airport and the improvements necessary to adequately cope with this demand.

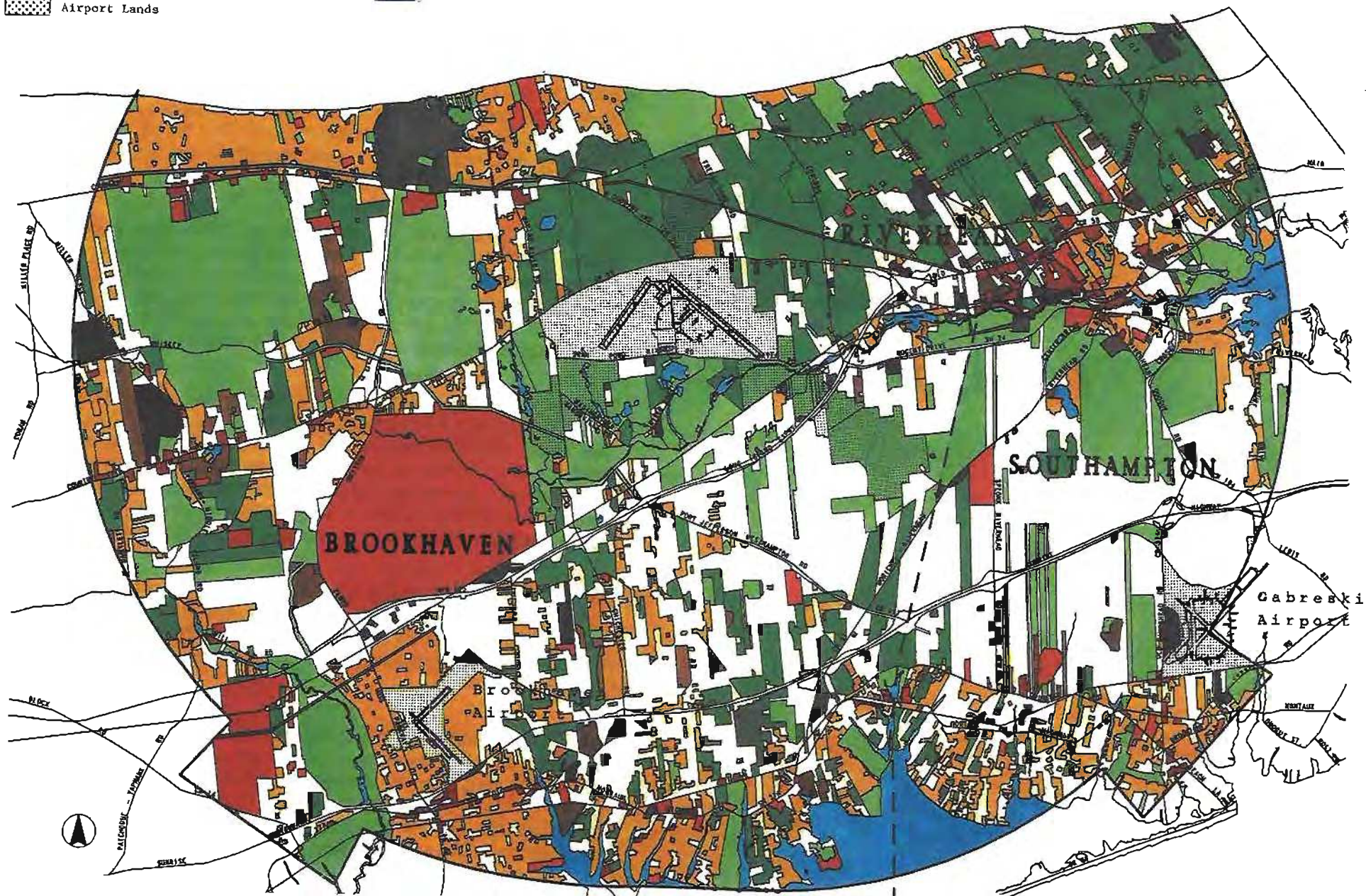


Figure 4-1 PSA General Land Use

Land Uses

GENERAL LAND USE IN THE PRIMARY STUDY AREA - The ten mile area surrounding the Calverton Airport has a large amount of open space and institutional uses, along with low density housing and some community clusters. Most of the open space is in the form of Federal, State, County and local parks, conservation and watershed protection areas. A small amount of land in the Town of Brookhaven and a large amount of land in the Town of Riverhead is being used for farming purposes. There are a few low density residential communities such as Manorville, Calverton and Westhampton. In addition, there are medium density communities in Wading River, Center Moriches, Mastic-Shirley, Rocky Point, Shoreham and Eastport. These areas have small commercial activities surrounded by generally older seasonal homes converted to year-round use with newer subdivisions in their outlying areas. A few older communities with central business districts, such as Riverhead and Westhampton Beach, are on the periphery of the area along with some growing communities such as Middle Island, Ridge and Yaphank which contain mixes of single family homes, multifamily concentrations and scattered commercial service areas. (See Figure 4-1) The most important land use areas are the ones that could be directly affected by air traffic from the two runways at Calverton. In a northeast direction, the general pattern of land use is open space, farmland permanently protected through the Development Rights Program, and shore-front housing that contains both seasonal and year-round units.

Land uses to the northwest also contain open land in the form of the national cemetery, lower density housing and the utility site at Shoreham.

The area to the southwest is predominantly open space and institutional with the 3,000 acres of the Brookhaven National Laboratory as the dominating land use.

The area to the southeast is a continuous corridor of existing and proposed open space. Large-scale County purchases in this vicinity have left only scattered outparcels to ulti-

mately create a continuous corridor of open land between the Calverton Airport and the County Airport in Westhampton.

Current Zoning

To determine the potential land uses that could occur within the PSA the zoning codes and districts of the three towns within the Primary Study Area were reviewed and a composite zoning map assembled. (See Figure 4-2.) This information can be referred to in the description that follows regarding the comprehensive plans drawn up by the municipalities.

COUNTY AND TOWN PLANS FOR THE SURROUNDING AREA - Comprehensive Plans have been done for the three surrounding towns during the last twenty years. The most recent is the five year old Town of Brookhaven plan which recommends an extensive amount of low density category to protect the pine barrens and the Peconic River corridor. Large sections of the area around Calverton were recommended for low density and the Town followed up by creating five acre zoning on much of the land. The plan also called for concentrations of development in the communities of Ridge, Middle Island, and Yaphank. Much of the remainder of the study area recommended removal of excess industrial zoning by relocating it into the less environmentally sensitive south Yaphank area and infilling many of the existing vacant parcels with one-half acre to one acre lot sizes.

The Town of Riverhead plan envisioned a very large industrial zone surrounding the Calverton facility. Many of the woodlands in the Peconic River corridor and the farmlands were recommended to have industrial use. Some of this industrial land zoning has been scaled back; however, there is still potential industrial use on more than 3,000 acres of farmland that remains in the Town's zoning ordinance. The Town of Riverhead plans call for concentrating much of the future commercial and residential growth in the vicinity of the Riverhead central business district, while preserving the central farmland belt. At the present time, farmland is zoned for one acre residential lots which discourages cluster development and can make it desirable for future residences when there is again a market demand for larger tracts of housing. Recent modifications to the Town zoning

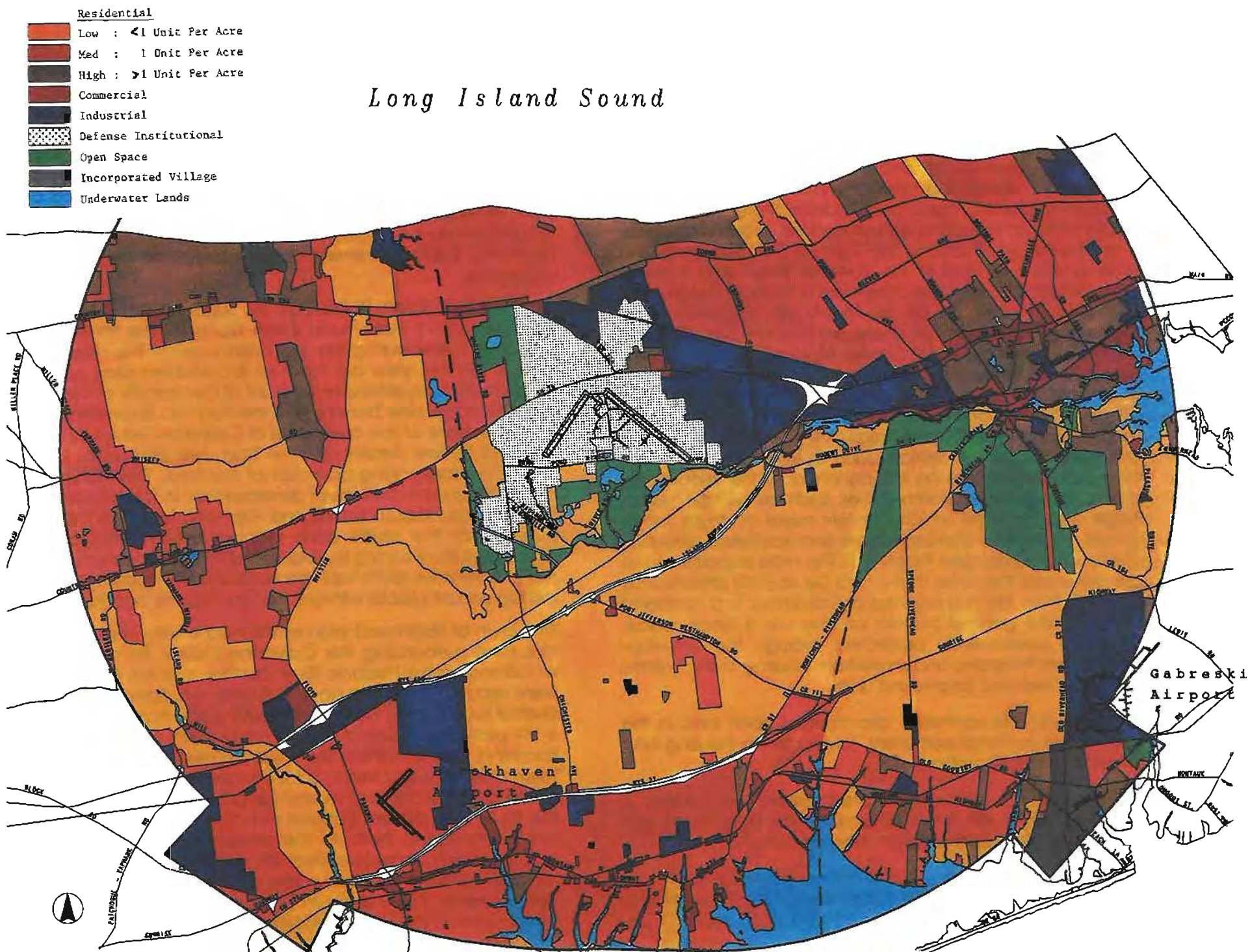


Figure 4-2 Zoning Composite

have eliminated a significant amount of industrial zoning in the Peconic River corridor. A large portion of this land has now been brought into public ownership.

The original plans for the Town of Southampton within the study area called for more than a ten thousand acre industrial complex in the vicinity of the County Airport. During the 1980's, the Town again evaluated this idea and rezoned much of the land that is located at the outside range of Calverton to five acre residential zoning. In the last decade, a large amount of this low density zoning has been purchased for watershed preservation.

County plans for the Calverton area are similar to the latest proposals of the Towns. The major exception is the large amount of industrial property in the Town of Riverhead and the allowed density on the farmland in that Town. (See Figure 4-3)

LAND USE WITHIN RUNWAY CORRIDORS OF CALVERTON AIRPORT - Future land use in the runway corridors is a primary concern in this study. Therefore, the following summary indicates land use trends in the four corridors around the Airport.

The northeastern portion of the runway affected area (Rwy 23-end) is entirely in the Town of Riverhead. Future land use plans envision some industrial uses with a large amount of farmland retention either by continued purchase of development rights, transfer of development rights or clustering. Most of the housing potential would be confined to the shorefront north of Sound Avenue that is not part of the permanent golf courses or municipally owned open space. Between zero and two miles from the end of the northeast runway, there is a clear zone being used for farming purposes. Between two and three miles, the majority of the farmland is in the Suffolk County Development Rights Program and will stay in farming for perpetuity. Between three and four miles, there are a mix of residential and open space uses and beyond four miles is the Long Island Sound.

The northwest corridor (Rwy 14-end) is partially in the Town of Riverhead and partially in the Town of Brookhaven. The general land uses that are presently open space are expected to remain, while the remainder will infill with a lim-

ited amount of residential development. The eight hundred acre Shoreham site is expected to remain in a combination of utility and transportation uses. Between zero and two miles from the northwest runway is the National Cemetery. Between two and four miles is the aforementioned mix of low and medium density residential, wetlands, a scout camp and utility use. Four miles and beyond is Long Island Sound.

The area affected by the southeast runway (Rwy 32-end) is in Brookhaven and Southampton Towns where the predominant zoning is five acre residential lots. Due to the existence of the 2,000 acres of Federal open space and another 5,000 acres of County watershed land, there are virtually no future land use conflicts envisioned here. Some of the remaining privately owned parcels are expected to be acquired through purchase or retention by the County through tax foreclosures. In addition, the use of clustering and transfer of development rights should also sharply limit any significant residential incursions. Between zero and three miles from the end of the runway is the Federal clear zone. Between three and eight miles is an open space corridor that ends at the County Airport in Westhampton. Beyond that, in the eight to ten mile distance, is a medium density residential area that comprises a portion of Westhampton Beach and has some limited room for infilling new residences and scattered commercial activities.

The corridor from the southwest runway (Rwy 5-end) comprises land in the Towns of Riverhead and Brookhaven. Open spaces and institutional uses dominate this corridor. Within the zero to two mile range is a corridor of Federal and State owned open space. There are tiny pockets of industrial and low density residential in the vicinity. The area between two and five miles covers the 3,000 acre Brookhaven National Laboratory. The five to seven mile area is proposed as a cluster of industrial and commercial uses. The final distance of seven to ten miles away from the runway includes a large County park and vacant land that is owned by the County and a group of private owners. The County land contains existing institutional use that could be expanded in the future and the private land is expected to be used for a combination of low density housing and industrial development.

- Low Density Residential
- High Density Residential
- Commercial
- Industrial
- Institutional
- Open Space

Long Island Sound



Figure 4-3 Town Comprehensive Plans

This review indicates that the majority of the land surrounding the Calverton Airport is generally compatible with the noise patterns emanating from the Calverton facility use. However, to the north of the NWIRP there are two existing residential areas, one to the northwest beyond Runway 14-end, and the other to the northeast beyond Runway 23-end. They are at the outside edge of the runway protection zones and may be impacted by the flight tracks of departing aircraft. These existing developments must be considered in any future increase of aviation activity or a change to the flight arrival/departure patterns. Another area of concern is for the residentially zoned lands located approximately 20,000 feet (3.8 miles) southeast of Runway 32-end that are within a *high terrain zone* (includes Bald Hill-295 feet AMSL). It is observed that development of this land is unlikely due to its difficult topography.

Transportation

The Transportation Division of the Suffolk County Department of Public Works was asked by the Long Island Regional Planning Board (LIRPB) to examine the traffic impacts of developing 7,075,500 square feet of cargo, industrial and related space at the Grumman facility in Calverton. The number of employees resulting from this proposed development is estimated at approximately 12,000. This report looks at existing highway conditions on roads serving the facility, trip generation and assignment, capacity constraints and alternative courses of action.

For purposes of initial analysis, the LIRPB assumed that 90% of the work force would come from points west of Wading River Road and that they would all enter the facility from an entrance on the south side of NYS 25 where the current Grumman north gate is located. The primary north-south access route to the facility from points west was assumed to be CR 46, William Floyd Parkway, although it is likely that some trips would occur on Wading River Road.

Existing Highway Conditions - The Grumman facility is bordered on the north by NYS 25, on the west by Schultz

Road/Wading River-Manorville Road, and on the south by Grumman Boulevard. Primary access to the facility from the west would be from NYS 25; or from NYS 495 and then north to NYS 25 either along CR 46, William Floyd Parkway (LIE Exit 68), or along Wading River Road (LIE Exit 69). CR 46 and Wading River Road would similarly be used for eastbound traffic from NYS 27. Access from the east is along NYS 25 or along Wading River Road to NYS 25 (eastbound). Figure 4-4 depicts the major roads within the PSA. Figure 4-5 depicts the roads on the perimeter of the ASA.

NYS 25 is a two-lane, east-west road with 30 feet of pavement and 6-foot shoulders from William Floyd Parkway to 2.5 miles east of Wading River Road and 24 feet of pavement and 6-foot shoulders east to Edwards Avenue. There is a signalized intersection at Wading River Road and a left-turn lane onto Wading River Road in the westbound direction. The two-way annual average daily traffic (AADT) between Wading River Road and Edwards Avenue is approximately 10,500. The one-way capacity is about 1,230 vehicles/hour. The current one-way peak hour is 630 vehicles, or about one-half of its capacity.

Schultz Road/Wading River-Manor Road is a two-lane, winding rural road with a variable pavement width of 24-36 feet, in generally poor condition, having deteriorated/crumbling edges and poor surface conditions. For nearly its entire length, it abuts environmentally sensitive land, including Suffolk County parkland and wetlands. Current volume figures are unavailable but are estimated to be less than 5,000 AADT. One-way capacity is estimated to be approximately 600 vehicles/hour. It is a primary north-south access road for both employees and commercial vehicles to the south gate of the Grumman facility located on Grumman Blvd. Grumman Blvd. itself has a similar, low quality physical and functional profile. During the times when the Grumman facility was operating at peak employment, arrival and departure times for employees had to be staggered to minimize congestion.

CR 46, William Floyd Parkway, is a four-lane, divided facility with 48-foot pavement width and 12-foot shoulders. North of the LIE, it has a variable right-of-way of approximately

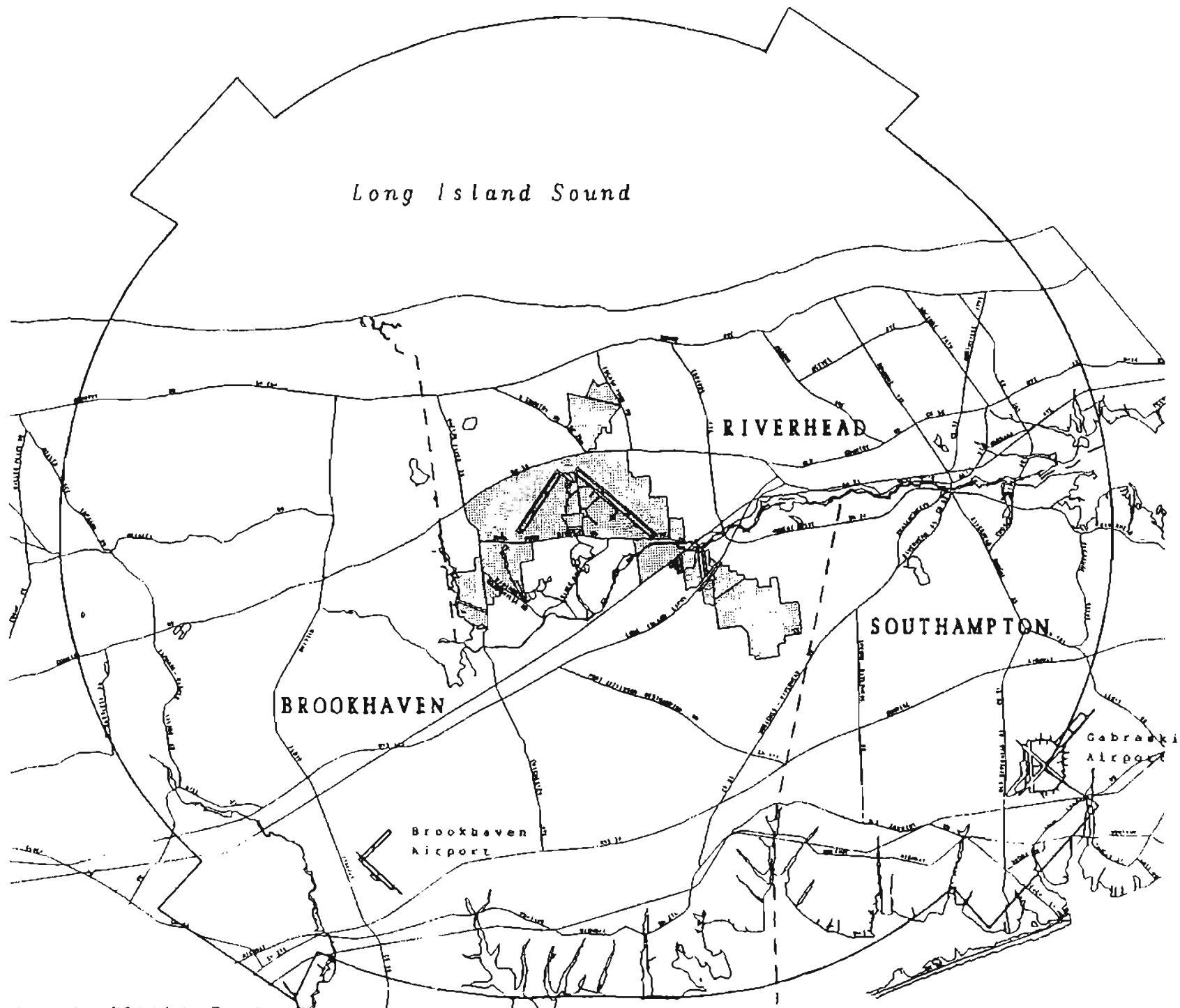


Figure 4-4 PSA Major Roads

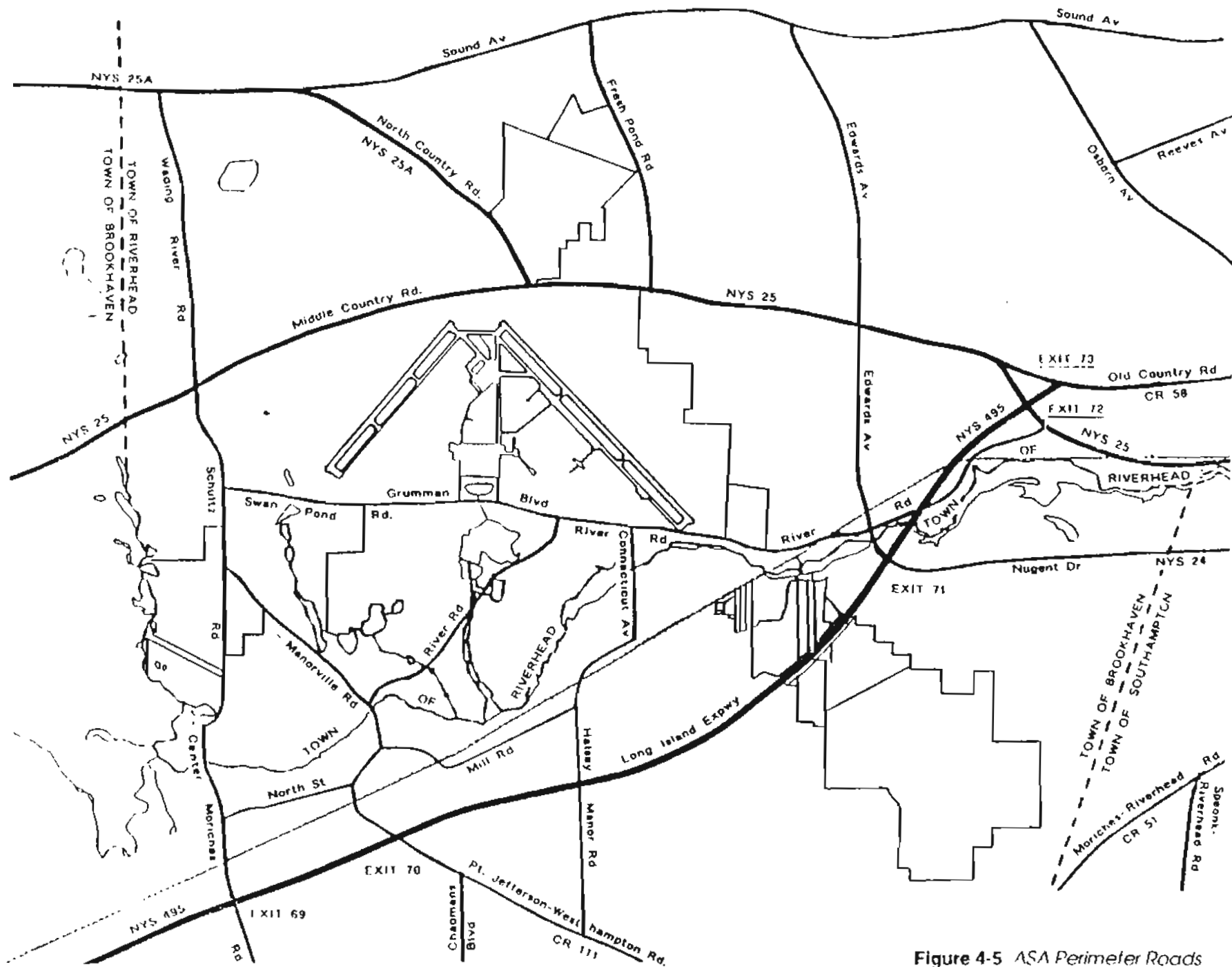


Figure 4-5 ASA Perimeter Roads

150 feet. The current traffic volume is approximately 24,000 AADT. The one-way capacity is 3,600 vehicles/hour. The current one-way peak hour volume is approximately 1,200 vehicles, or about one-third of its estimated capacity.

TRAFFIC IMPACTS ON AREA ROADS, NO-BUILD - Traffic on the major roads serving the Grumman facility are estimated to grow at approximately 3% per year even if the proposed development does not take place. However, this does not take into consideration a major proposed commercial and residential development in the northwest quadrant of the intersection of NYS 495 and CR 46, William Floyd Parkway, or the possibility of a major factory outlet center east of the airfield in the Town of Riverhead. The Suffolk County Department of Public Works 1986 Highway Needs Assessment Report projected an AADT of approximately 80,000 on CR 46 in the post-2000 period based on this development taking place. This is nearly quadruple the current AADT. The recommendation was made that CR 46 be widened from 2 to 3 lanes in each direction from NYS 495 to Longwood Road. Even this capacity increase, however, would result in a level of service E for the road. If the proposed development of the Grumman Facility takes place, at the very least, this six-lane cross-section would have to be extended to NYS 25. However, even without this major development, further study should be made of the entrance/exit ramp capacity of CR 46 at NYS 25 and NYS 495.

TRAFFIC IMPACTS ON AREA ROADS, BUILD - It is assumed that 90% of the traffic to the site will come from the west of Wading River Road and 10% would come from east of this route, with all traffic arriving at the existing Grumman north entrance on NYS 25. Within this context, peak hour traffic loads were assigned to the east-west and north-south roads that provide access to the site based on their current volume relative to each other. The percentages of peak hour traffic assigned to each road segment are shown on Figure 4-6.

TRIP GENERATION - The proposed 7,075,500 square foot development was divided into the following general land uses, with an estimate of the number of employees as shown in Table 4-1.

TABLE 4-1
Use, Floor Area, Employees*

Land Use	ITE Code	Gross Floor Area	No. of Employees
Light Industry	110	2,030,000	4,613
Manufacturing	140	1,702,000	3,145
Heavy Industry	120	1,294,500	859
Warehousing	150	1,805,000	2,350
General Office	710	244,000	1,015
Grand Total		7,075,500	11,982

*ITE categories of land and trip generation formulas used.

Using the Institute of Traffic Engineers (ITE) trip generation software with the number of employees for each land use as the independent variable, the number of trips generated by the site was calculated. The results of the analysis are shown in the following tables:

TABLE 4-2
Average Weekday Driveway Volumes

Land Use	Employees	24-Hour Two-Way Volume	AM PK. HOUR		PM PK. HOUR	
			Enter	Exit	Enter	Exit
Light Industrial	4,613	13,644	1,092	224	165	1,212
Manufacturing	3,145	5,703	982	74	587	520
Heavy Industrial	859	704	121*	9*	87*	64*
Warehousing	2,350	7,536	672	261	381	707
General Office	1,015	3,261	423	52	74	360
Total		30,848	3,290	620	1,294	2,863

* Software did not have data available for peak hour volumes. Therefore, peak hour volumes for heavy industrial were estimated from 24-hour volumes, distributing the trips in the same proportion as they are for manufacturing

The resulting increase in a.m. peak hour traffic volume on the most severely impacted road segments serving the facility are shown on Table 4-3.

CAPACITY IMPROVEMENTS - If the property were developed as proposed, capacity improvements would have to be made to the following road segments: NYS 25 (from CR 46 to Grumman north entrance) and Wading River Road (from NYS 495 to NYS 25). On NYS 25 west of Wading River Road,

Long Island Sound

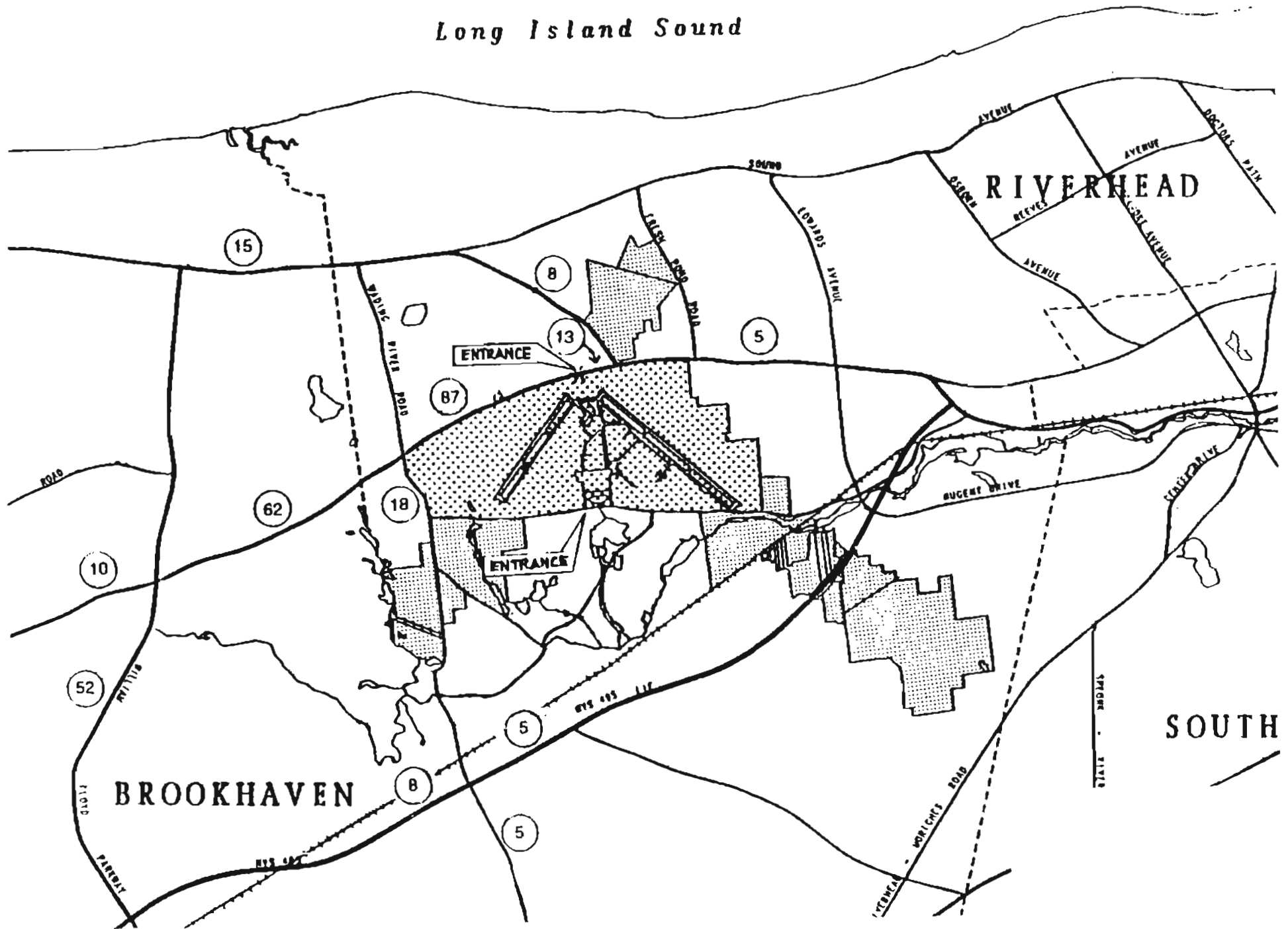


Figure 4-6 Peak Hour Traffic Percentages

TABLE 4-3
Impacted Road Segments

Route	From	To	Traffic Increase (Veh/Hr)	Current Excess(Veh/Hr)	Capacity Deficiency(Veh/Hr)
NYS 25	CR 46	Wading River Rd	2,040	600	1,440
NYS 25	Wading River Rd	North Entrance	2,862	600	2,262
Wading River Rd	NYS 495	NYS 25	592	300	292
CR 46	LIE	NYS 25	1,711	2,400	-

there would be an estimated 1,440 vehicle/hour one-way peak hour capacity deficiency. This is equivalent to one travel lane at the road's current lane capacity. Similarly, NYS 25 east of Wading River Road would have an estimated 2,262 vehicle/hour one-way peak hour capacity deficiency. This is the equivalent of two travel lanes at the road's current lane capacity. Wading River Road would have to be improved from its current substandard condition to a standard two-lane, cross-section within the existing right-of-way. As discussed previously CR46 would have to be improved if, in addition to the Calverton facility, major development takes place north of the NYS 495/CR46 intersections.

TABLE 4-4
Capacity Improvements Needed

Route	From	(Direction)	To	Needed Improvements
NYS 25	CR46	(East)	Apt Ent. (North)	Add lane west of Wading River Rd. Add two lanes east of WR Rd.
CR46	NYS 495	(North)	NYS 25	Add lane in each direction
Wading River Rd.	NYS 495	(North)	NYS 25	Improve to standard two-lane road
Grumman Blvd	Wading River Rd.	(East)	Edwards Ave.	Improve to standard two-lane road

Table 4-4 summarizes the needed capacity improvements, and Figure 4-7 indicates their location.

It was mentioned earlier in the report that there is a south entrance currently used by Grumman employees located on the north side of Grumman Boulevard off of Wading

River Road. If an additional south entrance is created to access the new proposed development, it is likely that improvements similar to those described for Wading River Road would have to be made on Grumman Boulevard. Use of the new south entrance and improvements to Grumman Boulevard will have the positive effect of reducing the one-way peak hour deficiency on NYS 25 between Wading River Road and the north entrance by the equivalent of one travel lane. Further engineering analysis would have to be done to determine the most efficient and cost-effective way of handling the projected capacity deficiencies and the cost of making those improvements.

ADDITIONAL ACTIONS - In order to reduce or ameliorate the estimated traffic impacts of the proposed development, it is recommended that the following actions be investigated for feasibility which, when taken together, may have a major impact on the use of single-occupant vehicles accessing the site.

- Develop new bus routes to serve facility. Cost of bus route approximately \$130,000/route/year.
- Develop extensive vanpooling/carpooling program. (Would be required under the Clean Air Act Amendments of 1990, in any case).
- Develop staggered work hour program which would spread out arrival and departure times and substantially reduce capacity deficiency impacts.
- Develop improved freight/rail transport on the main branch of the Long Island Rail Road, which currently has spur service into the southern portion of the airfield.
- Ferry Service - If a high-speed ferry service connecting Long Island's North Shore to Connecticut proves feasible, it could provide efficient transportation of freight to and from Calverton, thereby easing freight traffic over Long Island roads and easing congestion through New York City. Several ferry studies of the Long Island Sound crossing have been conducted by the New York/New Jersey Port Authority in July 1992. This report prompted the New York State Department of Transportation to establish a Ferry Task Force who are seeking to establish a high-speed ferry service, with a key site being adjacent to the Shoreham Power plant. This Task Force is still on-going.

Long Island Sound

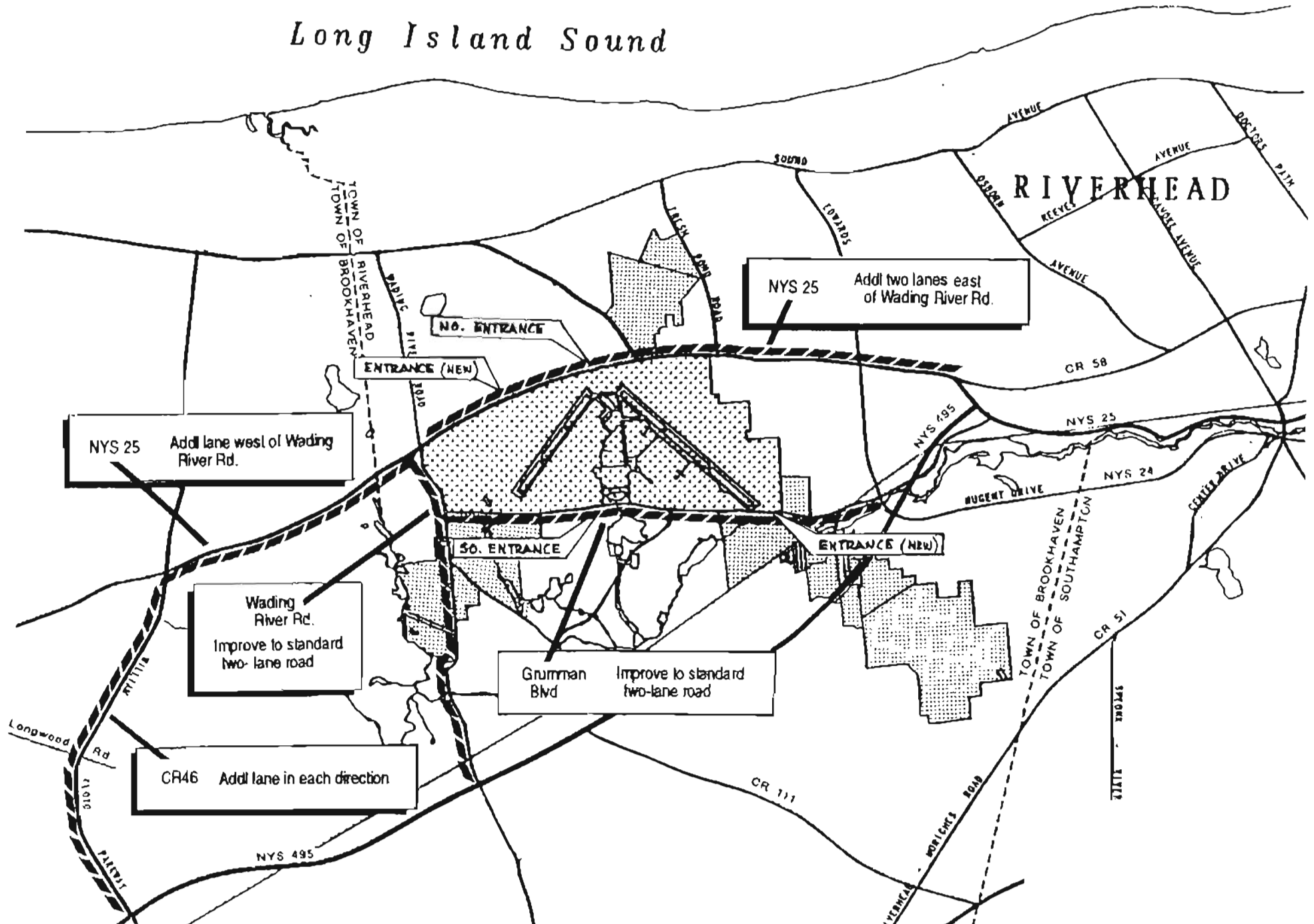


Figure 4-7 Capacity Improvement Locations

CHAPTER FIVE

Site Alternatives

Introduction

The determination of the feasibility of using the Calverton Airport for joint military/commercial use is predicated on the assumption that military use will continue. If that is the case, then the problems to be solved include:

1. How much land is available for commercial development?
2. What types of commercial uses are possible?
3. What improvements have to be made to accommodate commercial development?
4. How much will it cost?
5. Who will pay for it?
6. What are the economic benefits?
7. What are the impacts on the surrounding communities?

This chapter addresses the first two items. Items 3, 4 and 5 are discussed in Chapter Six. Items 6, and 7 are discussed in Chapters Two, Four, Seven and Eight.

Another aspect that must be considered is the determination of feasibility if Grumman withdraws from Calverton. This raises a host of other problems, such as:

1. Will the U.S. Navy continue its ownership and operation if Grumman withdraws?
2. If so, under what conditions and terms?
3. Can commercial operations be justified without Grumman?
4. What can happen to the property?
5. Are other alternative uses feasible?

All five of these items are addressed in this chapter. The chapter starts with a description of the existing airport layout and features. This is followed by a summary of the site constraints as determined by the environmental analysis covered in Chapter Three.

A variety of potential users is then identified and site designs are proposed that could accommodate a mix of activities that in the aggregate could generate up to 12,000 jobs as discussed in Chapter Two.

The balance of the chapter discusses the consequences of a termination of use by Grumman and its implications on the feasibility of continued airfield operation.

The policy conclusions that flow from this analysis are the subject of Chapter Eight.

Airport Property and Easements

The entire Naval Weapons Industrial Reserve Plant holdings comprise of 5,900 acres, of which 2,913 acres are located within a fenced area, with the balance being avigational easement acreages outside the fence. Grumman leases 944 acres from the U.S. Navy. Avigational easements (green areas in Figure 5-5, The Airport Study Area) exist for all runway clear zones and to maintain the navigational aids and approach lights. Figure 5-1 depicts the property line, clear zones and proposed taxiways.

RUNWAYS - Both runways have a bearing strength of 50,000 lbs per wheel, and are equipped with emergency E-28 bi-directional cable) and E-5 (directional chain) aircraft arresting gear, high intensity runway lights (HIRL), and approach lighting. The construction of the first 1,000 feet at the ends of each runway is concrete with asphalt construction for the balance of their lengths. The high value of the aircraft product being tested justifies the continuous runway maintenance program conducted by Grumman Aerospace. Table 5-1 summarizes the runway characteristics.

TABLE 5-1
Runway Characteristics

	<i>Primary</i>	<i>Secondary</i>
Number/Direction	14/32 SE-NW	05/23 NE-SW
Length, Feet	10,001	7,001
Width, Feet	200	200
Surface	Concrete/Asphalt	Concrete/Asphalt
Condition	Good	Good
Pavement Strength	50,000 lbs/wheel	50,000 lbs/wheel

RUNWAY OPERATIONS - The records reflect that Runway 05 handles 12% of the operations, Runway 23 handles 26%, Runway 14 handles 23%, and Runway 32 handles 39%. Typically only one runway is active at any given time depending on local wind conditions. The runway elevations vary between 52 (Rwy 32-end) at the southeast corner of the

Airport, and 75 feet above mean sea level (Rwy 23-end) at the northern boundary.

RUNWAY PROTECTION ZONES - The runway protection zone for a runway is set by the FAA depending on the use of that runway. It defines an area that should be kept clear of obstructions that might penetrate the allowable approach slope. All runway protection zones begin 200 feet from the runway threshold and extend outwardly from there for distances and widths dependent on runway use, as shown on Figure 5-1. All runways at Calverton are *non-precision* runways with an existing runway protection zone having an inner width of 1,000 feet and an outer width of 1,425 feet, a length of 1,700 feet, and are at ground level. The existing runway protection zones of each runway are not expected to be affected by the development discussed herein. However, a precision landing system (ILS or MLS) will be required for commercial service w/an approach slope of 50:1.

NAVIGATIONAL AIDS - The Calverton Airport, being primarily a military facility provides the facilities required for that type of aviation operation. Known also as a *Peconic Field* (CTO) the facility has two non-precision approaches. A non-precision approach provides only bearings and distance, with all additional information obtained from aviation charts.

Calverton's NAVAID designation is (CCC) (AB) VORTAC (L). This equipment has a dual role, being used by both civil and military aircraft. The term VORTAC describes a combination of VOR (VHF omnidirectional range) and TACAN (tactical air navigation). Rated as a (L) low altitude for normal anticipated interference-free service out to 40 nautical miles and up to 18,000 feet above sea level, including a (AB) continuous automatic transcribed weather broadcast service.

The Calverton VORTAC not only provides navigational information for approaches to Peconic Field, but also for Brookhaven Airport (VOR Rwy 6) and a missed approach holding pattern for all of Islip Airport's approaches. It is also used as a high altitude holding fix for western Long Island airports when air traffic and weather conditions warrant it. As an integral part of the National Airspace System it provides services for Long Island and Connecticut.

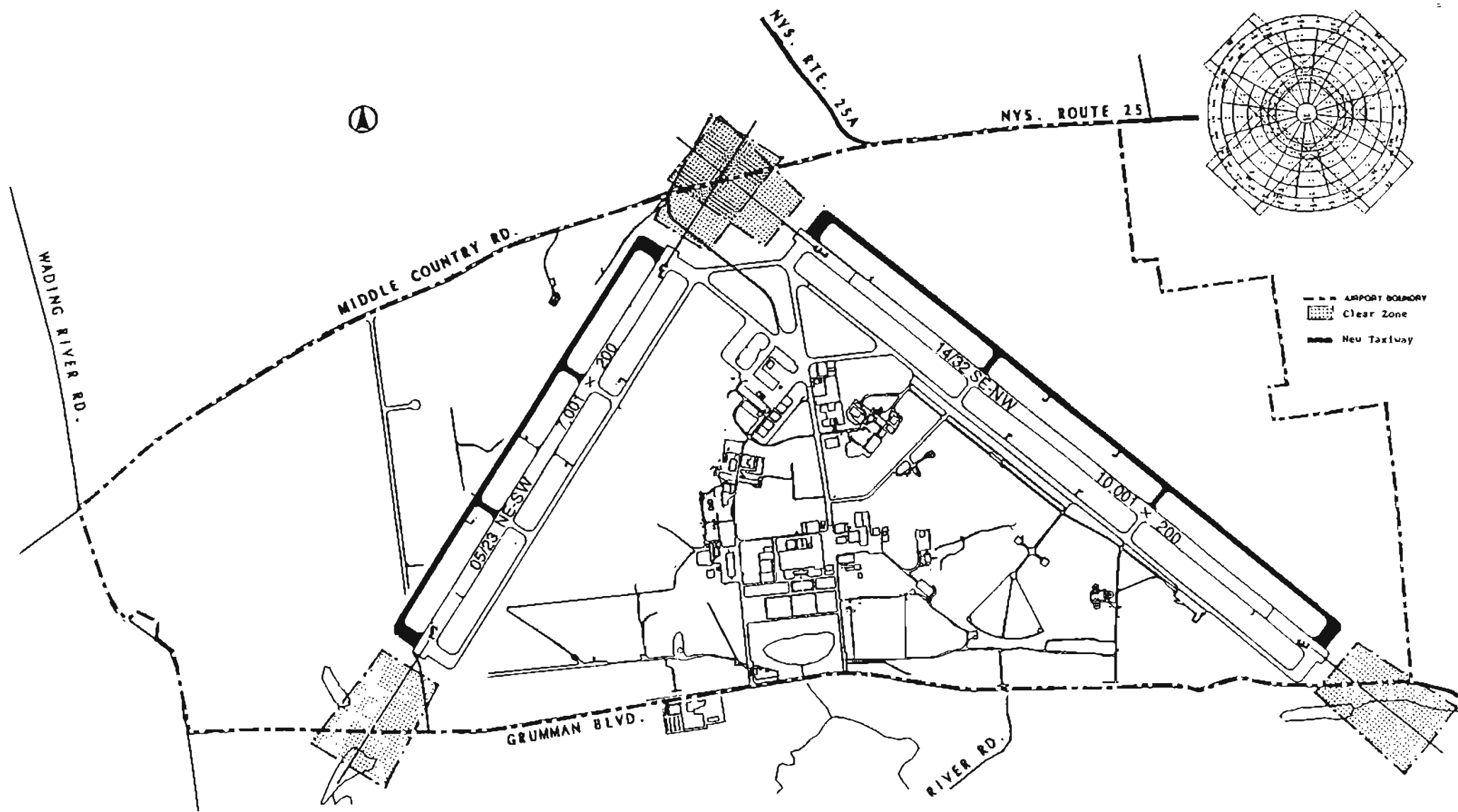


Figure 5-1 Airport Layout

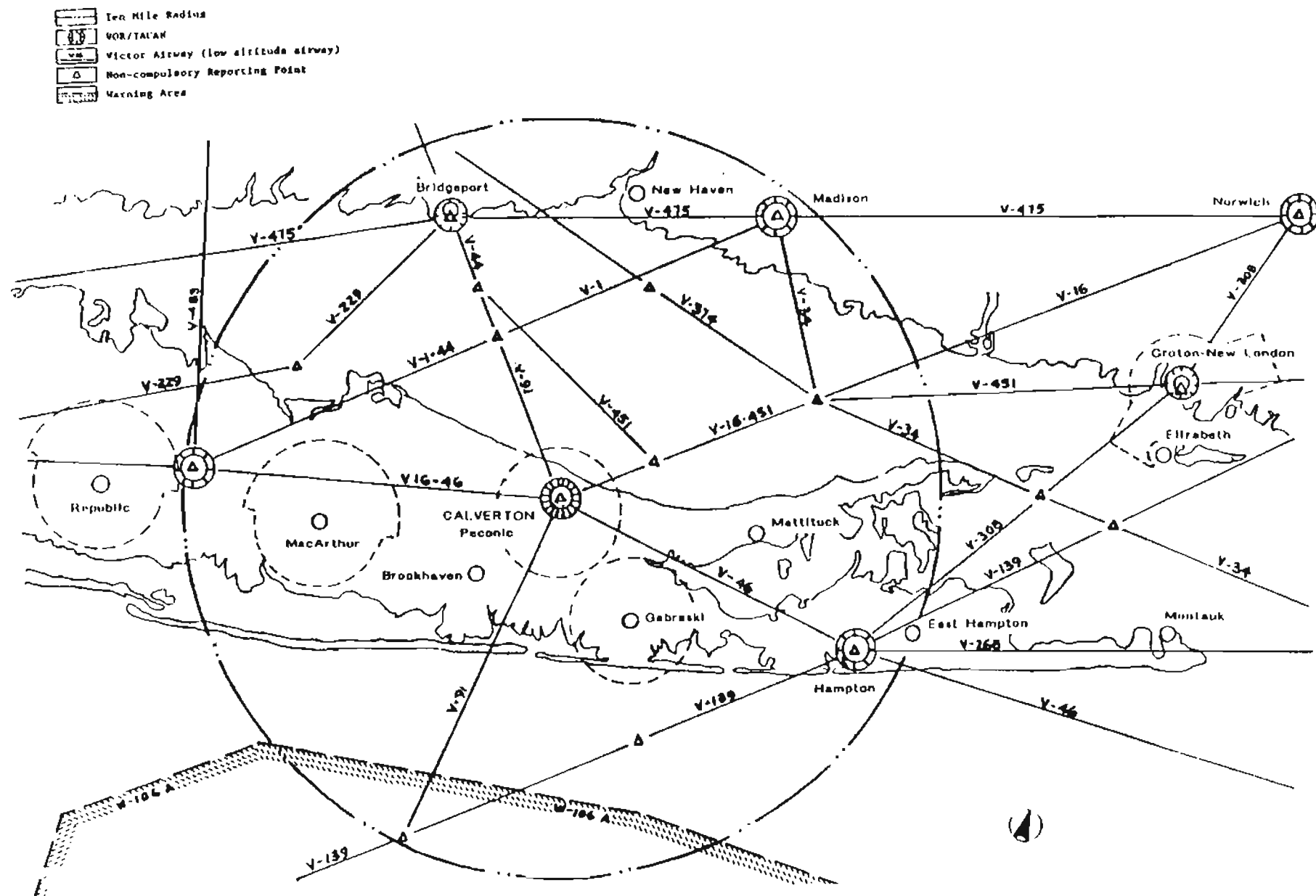


Figure 5-2 Summary of Airspace

The introduction of joint use by non-military aircraft will require additional navigational equipment. Grumman's cooperation in providing use of the Traffic Control Tower and CFR services will alleviate the initial major cost of these facilities. A summary of airspace is shown on Figure 5-2.

The only operational or procedural restrictions placed on an airport relates to the proximity of other airfields or special use airspace within the 25 nautical mile radius. The military warning area known as W-106 is such a restriction, except for military aircraft. It is located approximately 20 miles south east of Calverton Airport (over the Atlantic Ocean) and restricts flights operating between the surface and 3,000 feet within this area which is clearly marked on current aviation charts. The aviation chart *Approach Procedures* for both runways are shown on Figure 5-3.

The runway approach slopes and the lands they affect, including identification of salient features including a radio tower, are presented in Figure 5-4 *Airspace & Approaches*. Due to the foresight of the Navy in acquiring additional off-site lands for navigational easements the potential complaints of noise from aircraft arrivals and departures related to the Calverton Airfield have been minimized. Other municipal and County open space acquisitions around the NWIRP have precluded potential new residences from being built in this vicinity.

AIRCRAFT ACTIVITY - Over a six year period between 1982 and 1987 Calverton averaged about 7,300 operations a year. Almost all of these were military operations, with the majority being jet aircraft. The number of operations steadily declined between 1988 and 1991. The noise associated with this activity was previously discussed in detail in Chapter Three and indicated that the residential areas closest to the Airport, which are the uses of critical concern, did not appear to be adversely affected by the existing 65 Ldn noise contour.

LAND USES PERMITTED - The *Airport Study Area (ASA)*, (Figure 5-5) incorporates the Navy owned lands of both the runway buffer areas and *within the fence* of the Airport proper, is currently within a Town of Riverhead zoning category of Defense Institutional District. This district was created

In recognition of the national and regional importance of these lands and also was designed to discourage their further subdivision. Despite the fact that this is a federally owned property which is not technically subject to municipal zoning powers, the Calverton Airport property has operated generally within the bounds of the zoning district requirements.

The consideration of accommodating non-military activities within the existing aviation facility where Grumman Aerospace is currently conducting its national defense mission of testing, retrofitting and supplying military aircraft to the U.S. Navy is not in conflict with permissible land uses under the Town zoning code. Since the owner of the land is the U.S. Navy and the current tenant is Grumman Aerospace, any plans for joint-use must first be acceptable to these two parties before any further development can occur.

Site Constraints

For purposes of this joint-use feasibility study the lands *within the fence* but outside of Grumman's leased acreage and runway restriction boundaries were considered for potential development. However, environmental analysis concluded that this total acreage would be subject to further diminution due to constraints posed by the natural environment and regulatory protections afforded this site. See Chapter Three for a full discussion and analysis.

Of the 2,913 acres of the Airport Study Area (within the fence) 944 acres are reserved for Grumman and 592 acres is currently in runway use. This runway acreage includes the runway clearance area (measured 750 feet from the centerline of an ILS runway) within which no buildings are permitted. The remaining 1,377 acres are further diminished by the combination of soil, groundwater, wetlands, and habitat protection areas. These areas where development would be precluded is approximately 253 acres on the west side (Runway 5/23), and on the east side (Runway 14/32) about 178 acres would be removed from consideration of development, leaving a net 946 acres available for use.

Approach to Design

The existence of the Calverton Airport within the rural setting of the east end of Long Island makes its aviation and

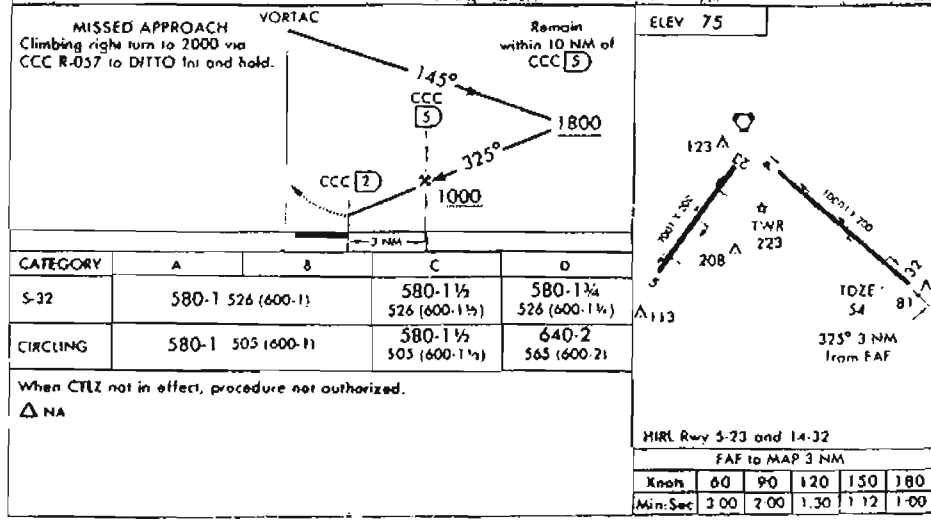
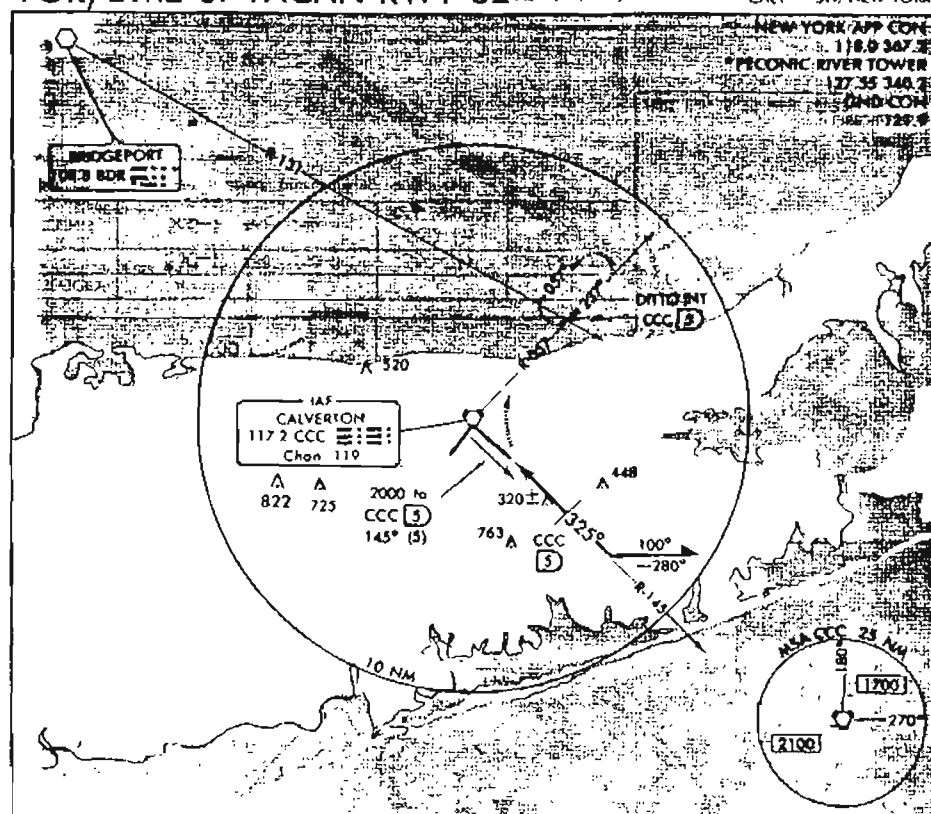
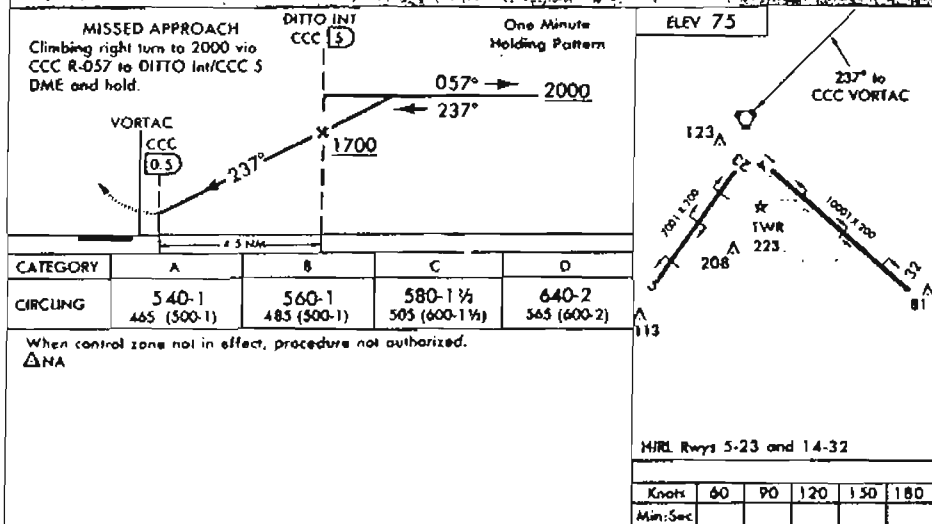
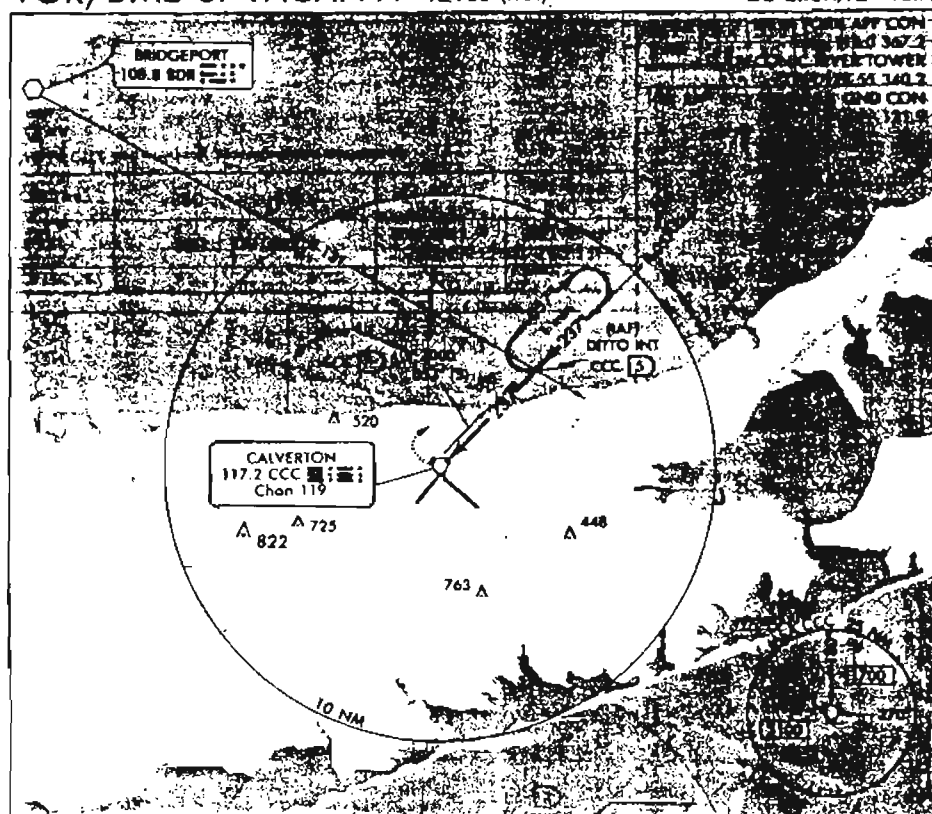


Figure 5-3 Approach Procedures

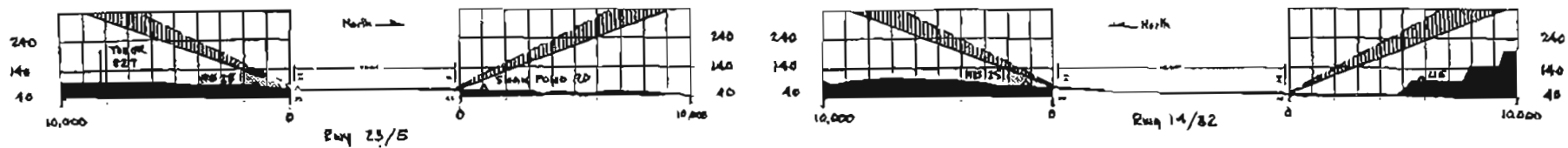
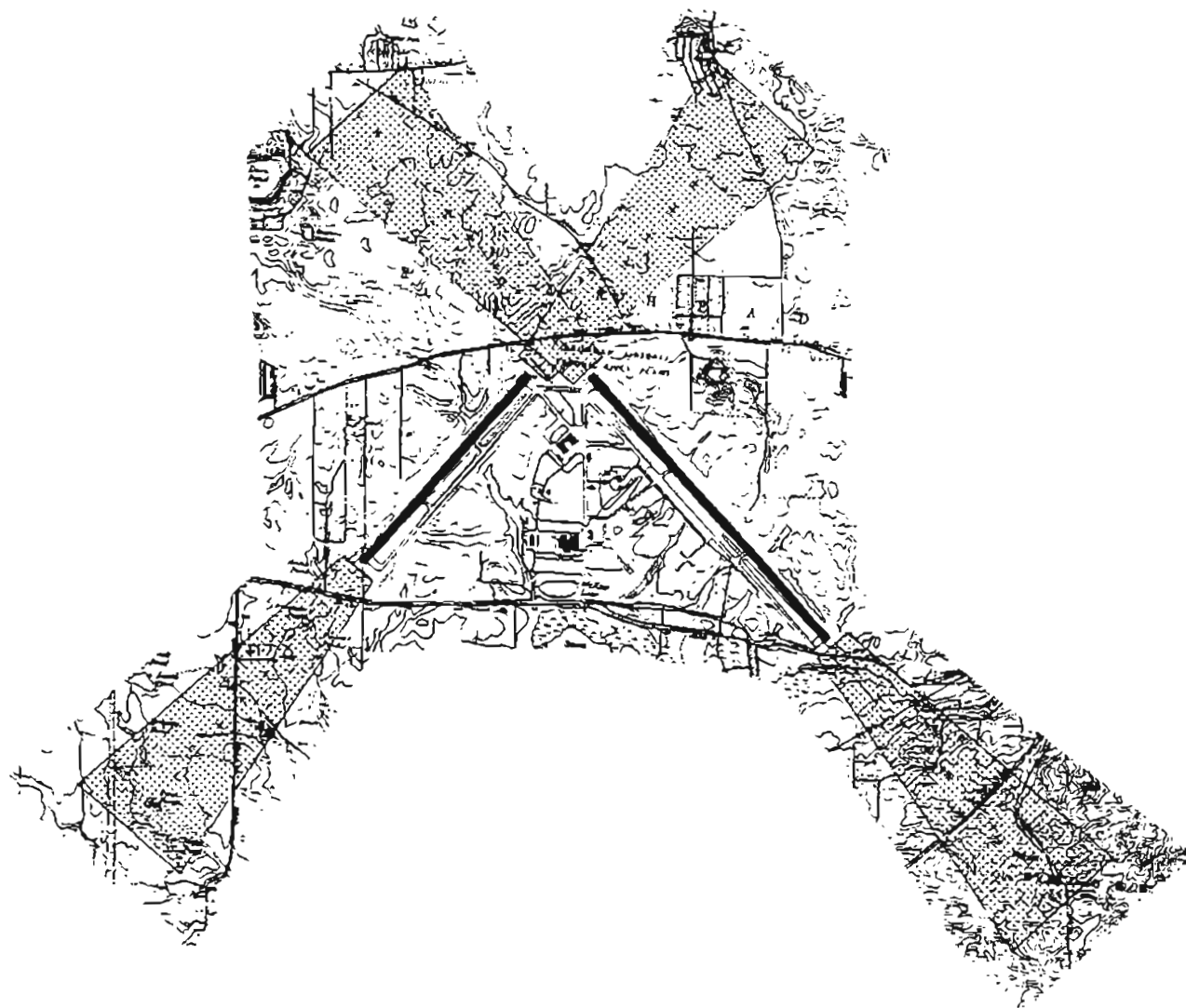


Figure 5-4 Airspace and Approaches

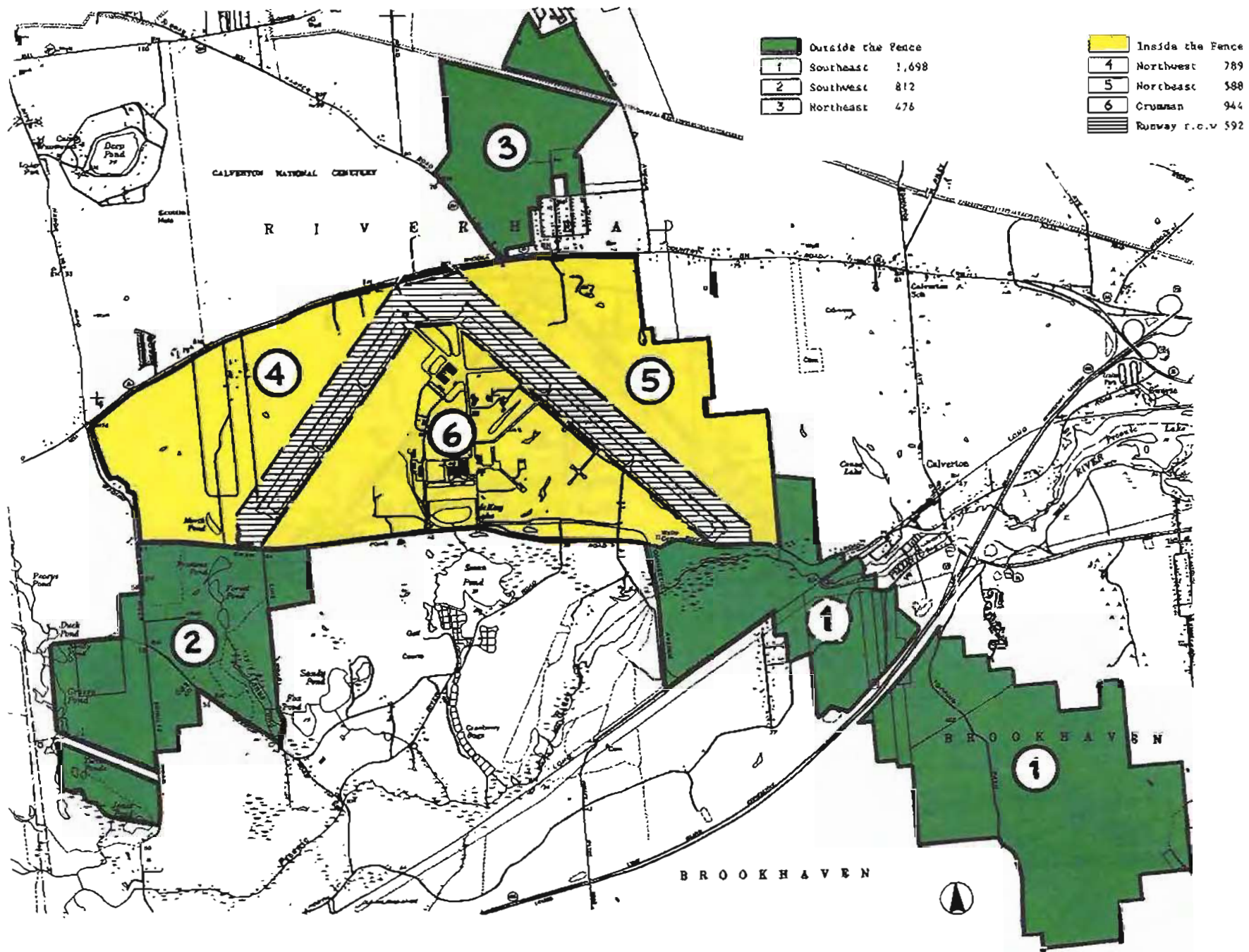


Figure 5-5 The Airport Study Area

employment activity of vital interest to the citizens of its adjacent communities. In approaching the feasibility of additional uses being accommodated at this facility the visual mitigation of site development and safety of increased employment activity and vehicular movements were incorporated into the design. As an airport, the primary use for aviation requires the runways and their flight patterns be protected against obstructions to facilitate the safe operation of aircraft. Another high priority is facilitate the accommodation of aviation base activities (i.e. hangers, aprons, fuel, etc.). A third priority is to locate industrial and business uses that have a need or benefit to be located at an airport (for example, use of cargo aircraft, services to aviation, or *Just-In-Time* (JIT) distribution activity). Just-In-Time (JIT) in this scenario is an approach to reducing inventory investment and replacing it with time-definite transportation services such as air freight and expedited trucking.

The building areas by use, and jobs generated were identified in the economic analysis contained in Chapter Two and is shown on Table 5-2.

TABLE 5-2
Square Footage/Jobs Generated for the Scenario

	<i>Jobs</i>	<i>Square Feet</i>
Fixed Base Operator	100	200,000
Airport Manager/U.S. Customs	35	130,500
Air Cargo Facility/Integrated Carrier	370	500,000
Foreign Trade Zone	1,075	540,000
Aviation Maintenance Facility	600	1,305,000
Industrial Park	10,000	4,400,000
Totals	12,180	7,075,500

In the Figures that follow (Figures 5-6, 5-7, 5-9, 5-10) the conceptual development is identified by Runway number with the base map including new taxiways to serve the anticipated aviation uses. The necessary air traffic Control Tower and CFR (crash/fire/rescue) services will be provided by Grumman through their existing equipment, therefore they are not located within the design areas.

Site Development

The specific uses envisioned were placed into a building configuration on a land parcel required to accommodate the development using the maximum of a 30 percent building coverage. The industrial parks design used a maximum 40 percent building coverage standard in determining the acreage required (less than 300 acres) to accommodate 4.4 million square feet of industrial park.

The on-site development constraints were further refined to identify their moderate/severe influence. Siting development on parcels outside areas of constraint is depicted by each Runway on Figures 5-6 (Rwy 5/23) and 5-7 (Rwy 14/32), *Development With Consideration of Constraints*.

See Figure 5-8 for the parcel use, of the 946 acres available.

Description of Conceptual Development

The design groups uses by function, compatibility with adjacent use, and land availability, utilizing the buffer areas as both visual and noise suppression elements:

WEST SIDE: Runway 5/23 pavement is 7,001 feet long by 200 feet wide with a SW/NE alignment. The runway area, which includes the existing runway, the existing taxiway and an additional taxiway constitutes 257 acres. See Figure 5-9 for the Conceptual Design.

TABLE 5-3
Runway 05/23 Development

<i>Use (right to left)</i>	<i>Elements of Activity</i>	<i>Bldg. (sf)</i>	<i>Parcel (ac)</i>	<i>Percent Coverage</i>
Airport Mgmt.	Office, Equipmt, Materials	105,000	8.3	29
Act Maintenance	Hangar, Inst. Calibrn, Paintg	810,000	60.0	31
Act Retrofit	Hangar, Noise Supprn, Repair	495,000	37.0	30
Sew Trmt Plant	Equipmt Bldg, Treatmt Fields	5,000	25.0	-
Industrial Pk.	Manufacturing, Research	1,088,000	71.6	35
Totals		2,503,000	201.9	28

The total area of the proposed aviation buildings adjacent to Runway 5/23 is 1,410,000 square feet and uses 105 acres of land. In addition, the proposed industrial park sections utilize 72 acres in providing 11 million square feet of build-

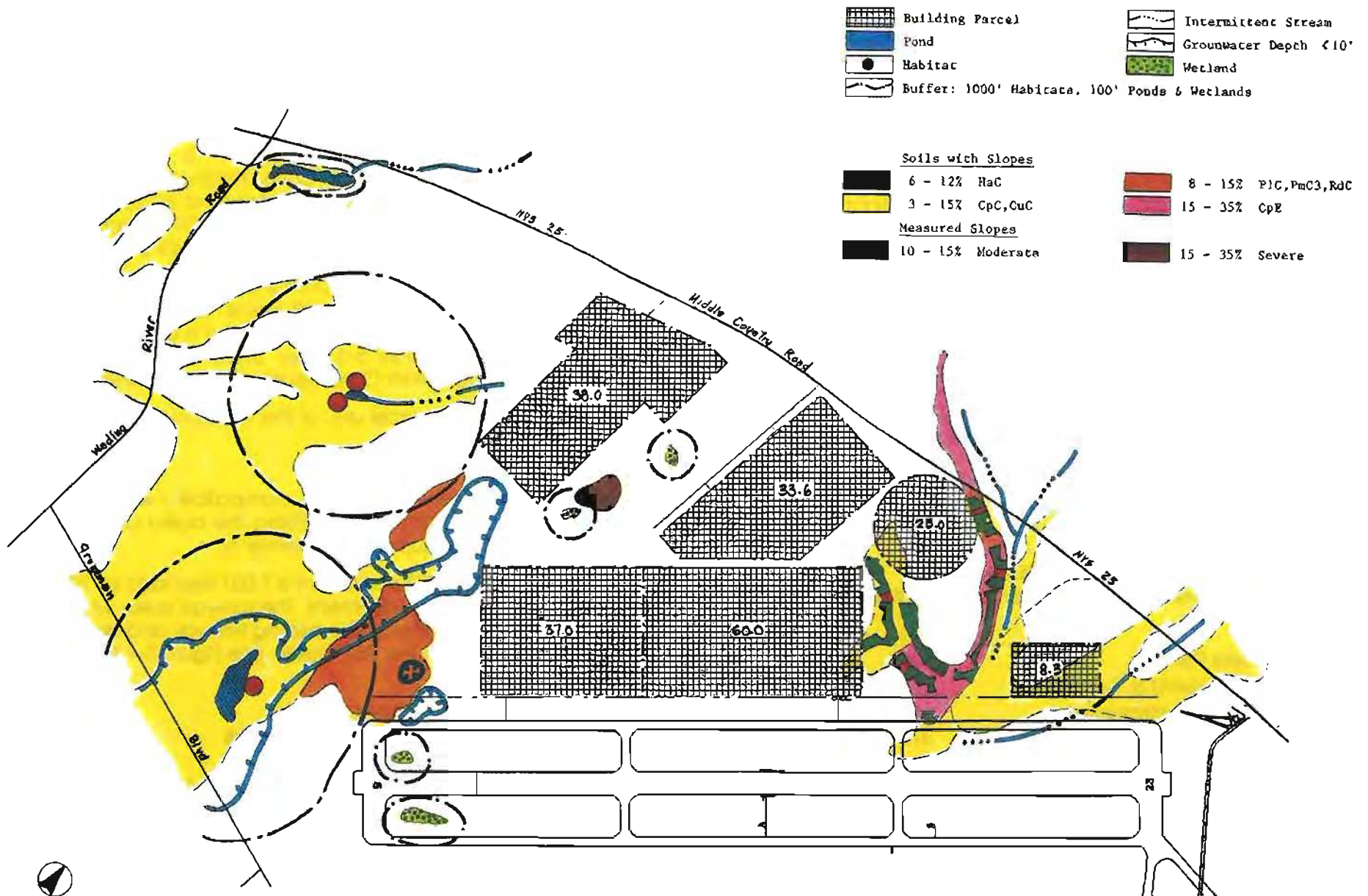


Figure 5-6 (Rwy 5/23) Development
With Consideration of Constraints

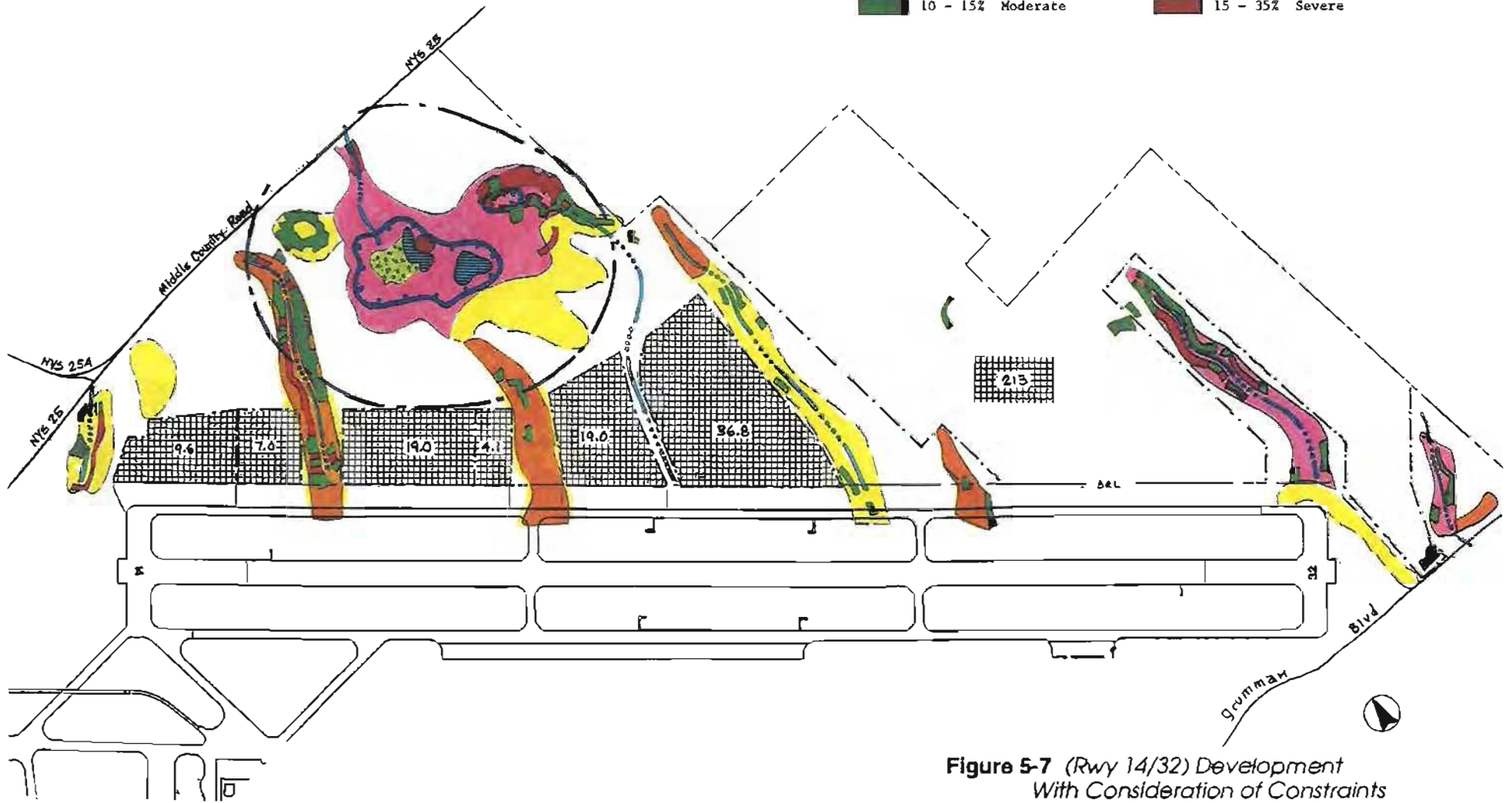
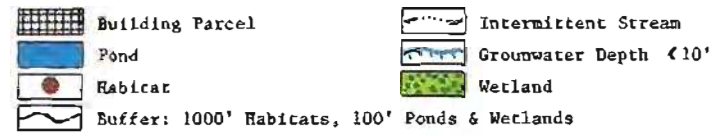


Figure 5-7 (Rwy 14/32) Development
With Consideration of Constraints

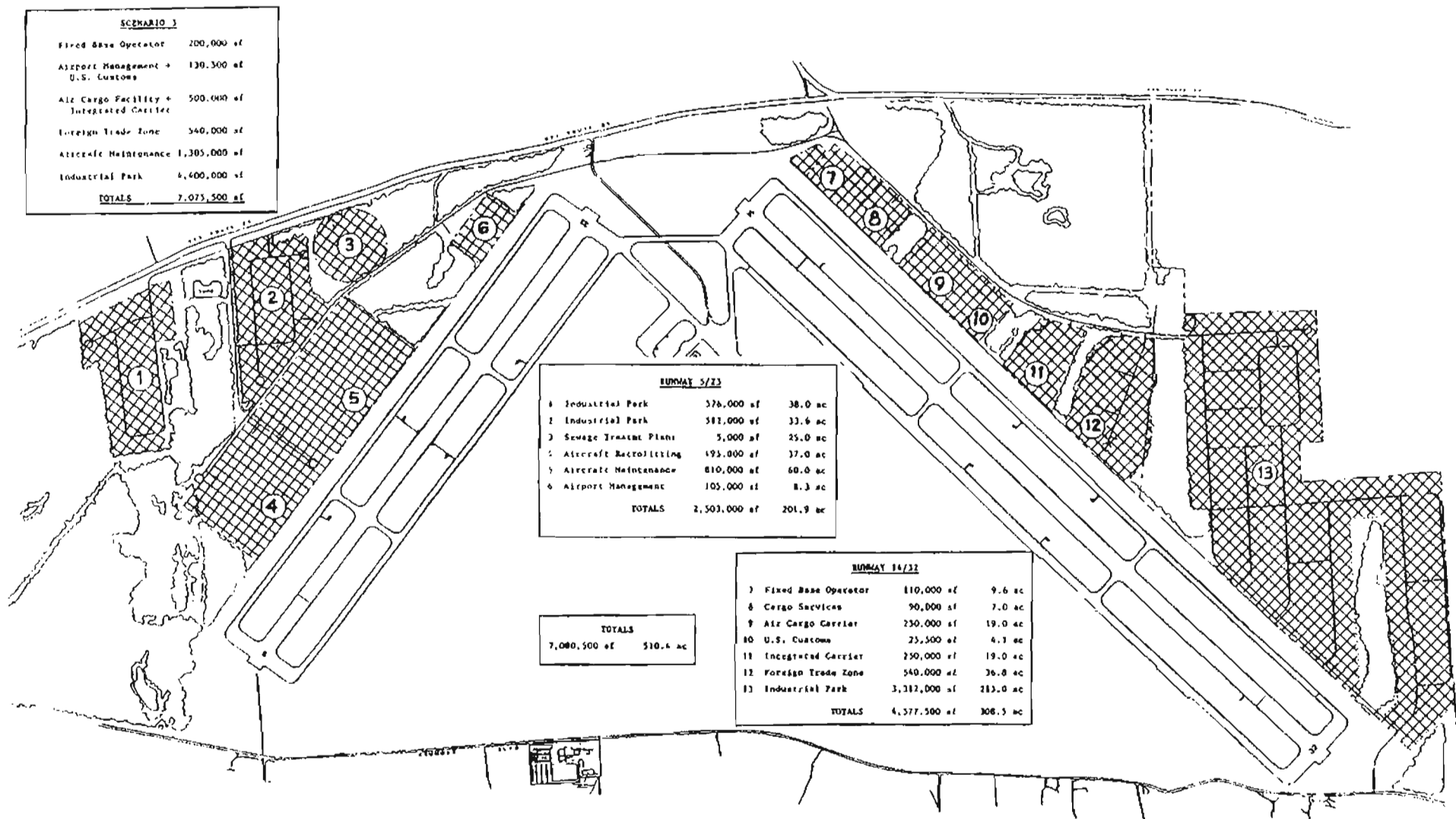


Figure 5-8 Conceptual Development Parcels

ings. The proposed tertiary level sewage treatment plant (located north of the boundary for lands which contribute to the Peconic River watershed) has a 5,000 square foot building surrounded by 25 acres of treatment fields.

The proposed road access to this development area is via a new entrance from Middle Country Road (NYS Rte 25) at a point 5,000 feet from the existing north entrance to the Calverton Airport which is the second access point to this development area. The north entrance is 3,000 feet to the west of the intersection of NYS Rte 25 and NYS Rte 25A which will be the primary entrance to the Airport's east side development

EAST SIDE: Runway 14/32 pavement is 10,001 feet long by 200 feet wide with a NW/SE alignment. The runway area, which includes the existing runway, the existing taxiway and an additional taxiway constitutes 335 acres. The total land adjacent to this runway which is available for development (beyond the constraints) is approximately 300 acres. See Figure 5-10 for the conceptual design.

TABLE 5-4
Runway 14/32 Development

<i>Use (right to left)</i>	<i>Elements of Activity</i>	<i>Bldg. (sf)</i>	<i>Parcel (ac)</i>	<i>Percent Coverage</i>
Fixed Base Opr	Fuel, Hangars, Cargo Svcs.	200,000	16.6	27
Air Cargo	Hangar, Warehouse, Storage	250,000	19.0	30
U.S. Customs	Office, Storage	25,500	4.1	14
Int. Carrier	Hangar, Warehouse, Storage	250,000	19.0	30
F.T.Z.	4 Buildings, 135,000 sq/ea	540,000	36.8	33
Industrial Pk.	Manufacturing, Research	3,312,000	213.0	35
Totals		4,577,500	308.5	34

The total area of proposed buildings adjacent to Runway 14/32 is 1,265,500 square utilizing 95.5 acres of land and represents a 30 percent building coverage of the developed land. In addition, the proposed industrial park accommodates 3.3 million square feet on 213 acres and reflects a 35 percent building coverage.

Road access to this development area is via a new entrance from Middle Country Road (NYS Rte 25) at a point directly opposite the intersection of Route 25 and NYS Rte

25A. Once on the site this roadway splits, running west across the runway protection zone at the apex of both runways to serve the western development area. The roadway's other branch runs in an south easterly direction with an alignment in the narrow corridor north of the *development* and south of the *habitat protection area*, curving eastward to intersect with the industrial park subdivision. A south access to the industrial park occurs from Grumman Boulevard at a point immediately south of the centerline of Runway 14/32, within the runway protection zone, and permits use of this roadway as a viable alternative for both private and commercial vehicles utilizing the site. An *emergency* entry can be secured at the north east corner of the Airport property line utilizing the existing r.o.w. from NYS Route 25, past the radar towers.

Development Alternatives

Use of Scenario 3 to depict the conceptual development permitted the inclusion of land use elements contained in Scenarios 1 and 2. There were other suggestions for alternative development of this site under specific scenarios. The early proposal by the Town of Riverhead to establish an Agricultural Training complex was accommodated within the acreage set aside for an industrial park. Another development suggestion was to use only a portion of the site as a golf course in recognition of the demand for this type of public recreation in eastern Suffolk County. An added alternative consideration is the *what if* scenario should Grumman Aerospace vacate the premises and moved their operations elsewhere.

The economic ramifications of Grumman's departure were forecasted in Chapter Two of this report. It should be recognized that this facility is federally owned by the U.S. Navy. In the event that Grumman does not renew its lease the Navy may declare the acreage *surplus* and be offered for sale at a public auction should no Federal agency be interested in re-using this facility. There should be little expectation that the Town of Riverhead or the County of Suffolk would purchase this entire holding, therefore, it would likely be purchased by multiple owners for development. Should the situation arise where the Calverton Airport is being consid-



Figure 5-9 Runway 5/23 Conceptual Development

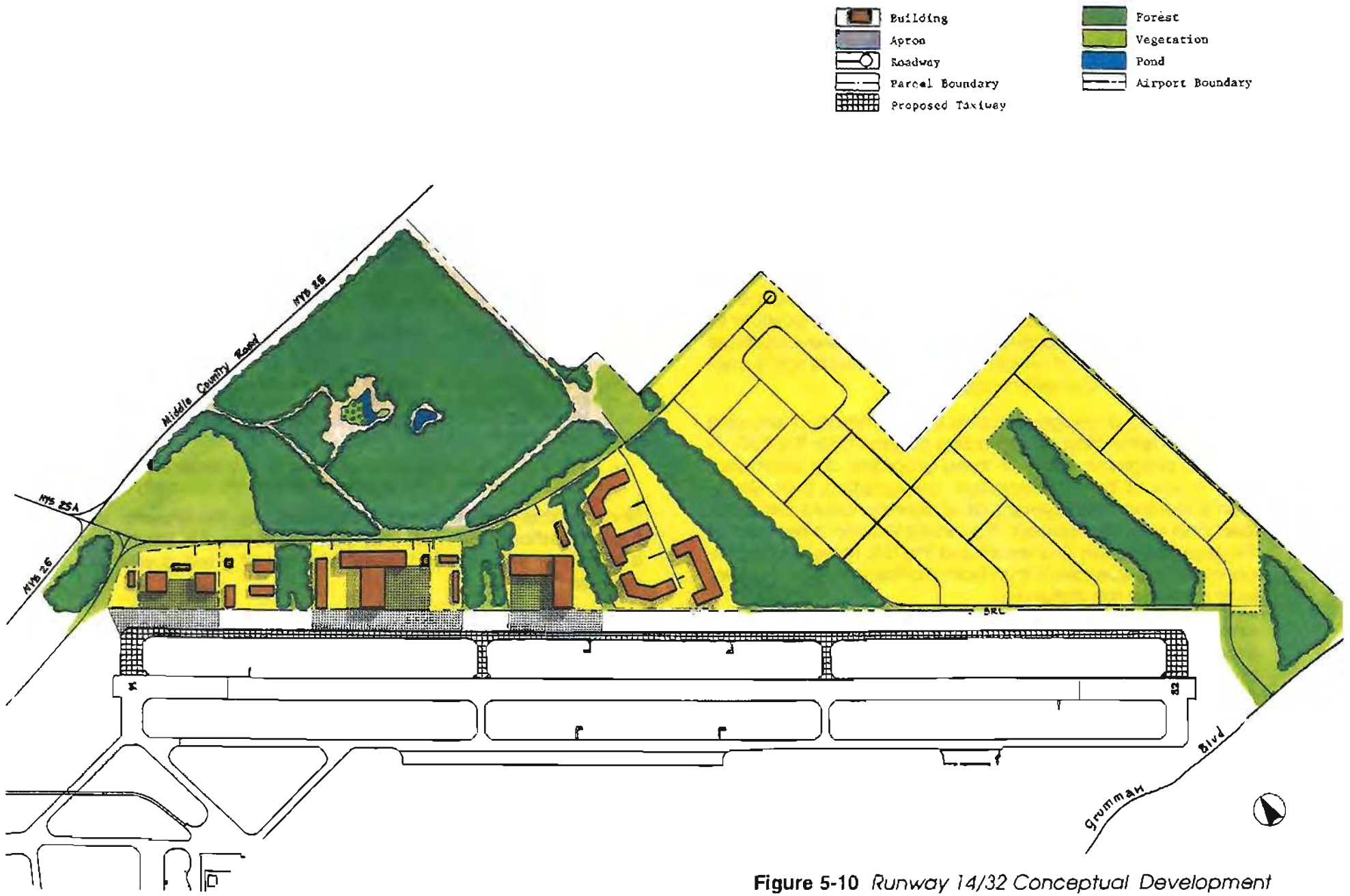


Figure 5-10 Runway 14/32 Conceptual Development

ered for disposal, one immediate action is recommended to be taken by the County and/or the State, that is, to designate for protection the undisturbed runway buffer lands (est. 2,986 acres) around the airport. A fuller discussion of the alternatives relating to a Grumman departure is discussed in the balance of this chapter.

Use by Grumman

When Grumman was at its peak of production on Long Island, the Calverton facility employed under 4000 who worked three shifts around the clock. Current employment has been reduced more than one-half to less than 2000. The key question to a continued Grumman presence at Calverton depends on answers that are not yet possible to determine. Several hypothetical scenarios however can be identified—anyone of which could allow Grumman's continued use of the Calverton property.

One scenario envisages success by Grumman in securing additional retrofitting or upgrading contracts for the E2C, F-14 or A6 programs. If any of these programs are extended, then it would be a reasonable presumption that Grumman's existing employment at Calverton could be stabilized and even enhanced. This would lead to a renewal of the lease between Grumman and the U.S. Navy. The significance of this scenario is that both parties would at the very least maintain the status quo.

Another scenario involves Grumman's participation with other firms to compete for new development work. For example, the Department of Defense (DOD) may seek a new generation fighter, the AX; or Grumman may try to expand its participation as a subcontractor for other firms.

However, there are at least three downsides to this scenario. First, the AX, if it happens, may not become a production program for ten or twenty years. Therefore it has no practical impact on decisions affecting Calverton at present. Furthermore, even if the AX was a more timely option, the likelihood of producing or assembling the planes at Calverton is extremely remote. Second, assuming Grumman remains in business as an independent firm, is the fact that Grumman has existing facilities in other states. If pro-

duction costs continue to remain excessively high on Long Island in contrast with other production locations, Grumman could follow the path it is already pursuing and move all new work off Long Island—unless the Navy (Grumman's client) insisted that Calverton remain open. Third, Grumman was subject to a major takeover attempt several years ago, and in its joint ventures with other and larger firms, could once again face such a prospect. The firms with the financial capacity for a takeover also have production facilities—if not in fact excess capacity—and could phase out the Long Island operation entirely.

A sober consideration of any of these options leads inescapably to a non-use scenario. Namely:

- What is the future of the Calverton Airport if Grumman leaves?
- What incentive would the Navy have to maintain the property without any military purpose being served? What are the consequences if the Navy abandons Calverton?
- What do these possibilities have on the feasibility of creating commercial development on the property?

Since neither the Navy nor Grumman has the answers to these questions, the most that can be assessed in this study is to examine the conjectures that each of these questions give rise to.

Grumman Withdrawal

It is logical, realistic and probable to anticipate that if Grumman does not receive new Navy contracts, the firm would have neither the incentive or need or justification to renew its lease at Calverton. A case can even be made that if they receive additional Navy contracts, it might be in Grumman's self interest to move the work to their Florida facilities, unless the Navy stipulated that the work be done at Calverton.

This leads directly to the second question. Would the Navy and/or the DOD and/or the Congress support the continuance of the property in the absence of active use? Periodically, the DOD conducts Base Relocation and Closure Studies. The current study does not include Calverton on

the list. This only means that for the immediate future the federal position is to maintain Calverton.

It is true that the Navy has expressed its support for Calverton because it is a superb military facility in that the property is well buffered and a restricted airspace over the Atlantic Ocean south of Long Island provides exclusive air operations. Therefore, one option the Navy could follow in the event of a Grumman pullout would be to mothball the facility pending future need. One re-use could be the relocation of the aviation and non-aviation development suggested by this report. Some adaptation of building uses would be required in placing the development proposal into acceptable existing buildings and support areas. The current acreage is sufficient to accommodate Scenario 3. No additional taxiways would be necessary. The issue of sewage treatment would require, at the very least, an upgrading in capacity and treatment process of the existing primary treatment STP. Another option would be to lease the airfield to the Air National Guard if the Guard were no longer welcome at the Gabreski County Airport. These questions, issues, options and consequences go to the heart of the entire feasibility study by opening an array of additional scenarios.

For example, if Grumman leaves there would then become available the 900 acres now used by Grumman. Instead of developing the property north, east and west of the runways, the opportunity would exist to replace the Grumman

presence with commercial industry. Another possibility would be to use the property for golf/condominium development with cutback runways to entice the jet-set to a Hilton-Head type of community. These uses could be feasible if the Navy continued its control and financial support. It is more likely, if past practice and policy is any guide, that the Navy would not accept the role of landlord for such activities.

The consequences of a Navy abandonment introduces dimensions that would have an impact well beyond the fenceline. Three thousand acres of Navy property outside the fenceline are very significant Pine Barrens in a CEA and an SGPA. These acres must be preserved. For forty years the people of Suffolk were and currently are beneficiaries of the Navy's contribution to Suffolk County's open space program. In earlier times whenever a federal agency declared a property to be surplus, it was offered to governmental units at no cost. This policy was changed by Executive Order (Presidential action) that now requires all Federal surplus property to be turned over to the General Services Administration for auction at market value. The future protection of these acres is a policy matter beyond the immediate scope of this study, but it is raised to provide the Towns and the County advance notice to be alert in case of such an eventuality.

Chapter Eight - CONCLUSIONS, will include a discussion of the ramifications of the alternatives and the degrees of feasibility of each alternative.

CHAPTER SIX

Administration and Fiscal Issues

Introduction

The prime objective of this study is to determine the feasibility of joint military/commercial usage of Calverton Airport. Five broad areas of inquiry must be examined, analyzed and synthesized in order to base the final conclusions and recommendations on more than intuition, guesswork or enthusiasm. While it is not essential that all five categories be in total harmony with one another, the relative success of implementation is directly and strongly tied to the degree of harmony that could be achieved.

The five areas are:

1. Economic Feasibility
2. Environmental Feasibility
3. Political Feasibility
4. Administrative Feasibility
5. Fiscal Feasibility

In the course of this study each element has been carried out as a discrete unit. It must be observed, however, that there are obvious and inseparable overlaps between the elements. Every aspect is affected by public policy requirements, decisions and constituencies that effect a political impact on each element.

Chapter Two demonstrated the potentials and the limitations of cargo operations in conjunction with industrial development. It appears that the industrial development is the engine that would drive the use of the airport, rather than the reverse. The amount of development possible from a land availability stance is limited, however, by several environmental constraints shown in Chapter Three.

Hence, the site design identified in Chapter Five is an amalgam of its economic potential modified by environmental criteria. The feasibility of promoting freight usage and industrial development is also controlled by policy and political decisions made in Washington, D.C. by the Navy, DOD, and the Congress. Political input from the citizens and

elected officials in Suffolk County is another major factor in reaching any final outcome. A number of the local issues are discussed in Chapter Seven.

This chapter is devoted to an array of administrative and fiscal issues that must be in place if implementation is to occur. The first part of the chapter discussed management options that run the gamut from Federal control, New York State control, Suffolk County and/or municipal control to privatization.

The latter part of the Chapter discusses the fiscal aspects of development.

Management Options

FEDERAL CONTROL - The Calverton Airport is owned and controlled by the U.S. Navy. Throughout its existence, since 1954, the Navy has maintained a lease agreement with the Grumman Corporation for the exclusive use by Grumman for the assembly, production, and testing of planes and equipment primarily destined for Navy procurement. The construction of infrastructure and the operational maintenance costs have been shared by the Navy and Grumman. In reality, Grumman's share of these costs have been charge-backs to the Navy. In other words, the entire cost of building, operating, and maintaining the Calverton facility—including the payments in lieu of taxes to the Town of Riverhead and the school district—have been borne by the Federal government.

Under any scenario for joint use, it is presumed that the Navy, as owner, would establish the conditions of leaseholds and operations consistent with the Navy's interests. This means that under any management scheme, the commercial activities would be subordinate to the Navy's objectives. Using the experience gained from the Navy/Grumman leasehold, it is reasonable to expect that the commercial users would have to assume a fair share of the operational costs, including payments in lieu of taxes. It is doubtful that the Navy would accept the overall respon-

sibility of actually managing the day-to-day operations of the commercial uses at the airfield. Therefore, some form of management mechanism would have to be created to operate and manage the commercial portion of the property.

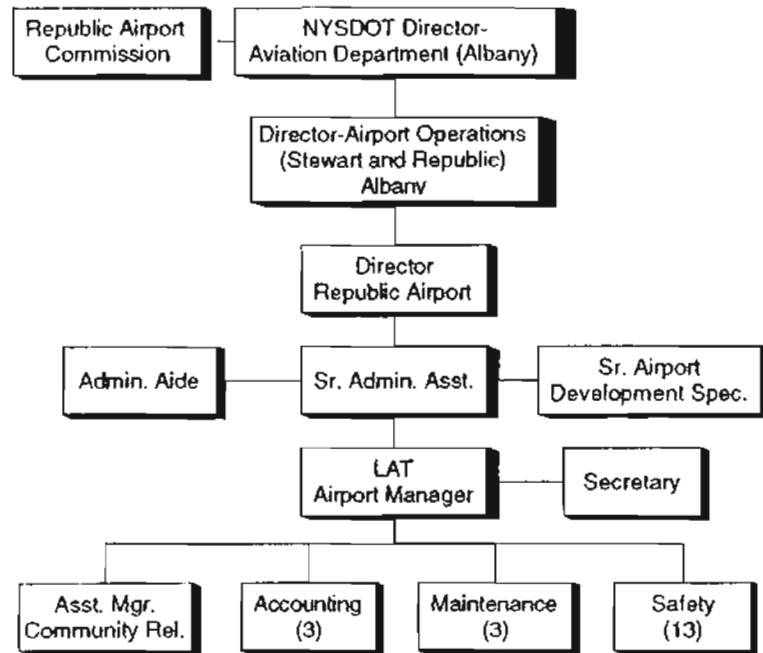
STATE OPTIONS - Two models exist that are in practice by the State of New York. One is the creation of an authority, e.g., the Port Authority of New York and New Jersey. The other is to place responsibility under the New York State Department of Transportation.

The authority mechanism has advantages, once created, of being an autonomous entity, capable of raising revenues, floating bonds, operating outside of conventional debt limits, and being closer to "business-like operations", apart from the usual political constraints, than any other form of governmental entity. It is these very qualities though that would render any approach towards creating an authority politically unacceptable in Suffolk County due to the very issue of the loss of local control. Another factor mitigating against an authority is the Navy ownership. The freedom of action available to an authority could become in conflict with federal control.

The second model avoids these objections and is the administrative path taken in regard to Republic and Stewart Airports. These Airports are owned by the New York State Department of Transportation (DOT) and operated by the Airport Operations group of the Aviation Department. Airport Operations manages both Airports with staff personnel located in the Department headquarters in Albany, New York and with line personnel located at both airports. Through a contractual arrangement, the day-to-day operation of Republic Airport is administered by Lockheed Air Terminals, Inc. (LAT). An Airport Commission of local citizens serves in an advisory capacity to the NYSDOT on all airport matters. The organizational chart for this structure is shown in Figure 6-1.

This approach provides for local participation and also allows for privatization in the day-to-day management of operations.

Figure 6-1
Republic Airport Organization Chart



LOCAL OPTIONS - The County of Suffolk, in conjunction with direct or indirect participation by the Towns of Riverhead, Brookhaven and Southampton could adopt a model similar to the DOT example.

The County operates the Gabreski County Airport in the Town of Southampton. The Towns of Islip, Brookhaven and East Hampton independently operate municipally controlled airports, indicating there is a history of experience that could be drawn from to arrive at an administrative mechanism reflecting the political wishes and realities.

PRIVATIZATION - The Navy also has the option of leasing the rights and responsibilities for development to a private organization, as it has with Grumman for the past four decades. In fact, the Navy does not need this feasibility study to justify, direct or control its choices in the use of Calverton

Airport. In the past, for example, commercial operations were allowed in the training of pilots for 707 jet airliners.

The Navy also has the option of relinquishing ownership of the property. This possibility changes all the feasibility options by raising the questions of what could be the future uses of Calverton.

POST NAVY OWNERSHIP The analyses conducted for this study have all been predicated on the assumption that both the Navy and Grumman would continue to operate at Calverton. Earlier in the project members of the Advisory Council requested answers to the hypothetical situation of Grumman leaving. It was suggested that the existing production facilities could be converted for non-defense industrial usage and as a result there would be no need to disturb the property at the north end.

Another suggestion was to use the property for housing and a golf course, with limited industrial development.

These issues all hinge on the future of Grumman. Grumman's labor force on Long Island is expected to dwindle below 10,000 this year. Despite the valiant efforts of the Long Island Congressional delegation to keep Grumman in aircraft production, this study would be remiss if all eventualities are not considered, regardless of how unpalatable the consequences may be.

In the event Grumman does not receive new aircraft construction or retrofitting contracts, the conclusion is inescapable that Grumman would have no use or justification in maintaining their presence at Calverton. One could even raise the specter of Grumman remaining a Long Island firm. At one time Long Island—the Cradle of Aviation—boasted of the Island's production of the finest Navy and Air Force fighters. Republic Aircraft Corporation, the producer of the P-47, one of the finest night fighters in World War II, is no longer in business on Long Island. Most of the former Republic property has been fallow for years.

If Grumman terminates its use at Calverton, what then would be the Navy's interest in retaining ownership? One of the prime factors that leads to the belief that industrial and freight operations could be feasible, is that the chal-

lenge is not to build a new facility. It is already there. More to the point, the sunk capital costs are a gift to joint use—so long as there is joint use.

The fiscal implications are discussed in the concluding portion of the Chapter. However, the implications of non-joint use will be further discussed in the final Chapter Eight - CONCLUSIONS AND FINDINGS.

Fiscal Feasibility

All of the recent studies examined (see the bibliography after Chapter Eight) have concluded that the creation of a dedicated all cargo airport is not an immediate need in the U.S. Efforts such as in North Carolina, or Perot Airport in Texas, or the Huntsville Alabama Cargo Airport clearly demonstrate the uphill battle to achieve economic viability.

A positive indication of economic feasibility is for development as part of a joint civilian/military use at an existing facility. The measure of feasibility though raises issues of a competitive nature. Chapter Five, based in part on the work contained in Chapters Two and Three, identifies the physical feasibility of locating industrial development at Calverton. The test of economic feasibility must go beyond the internal benefits of an existing facility with large capital investments in place. In order to attract private development, Calverton must be fully competitive with other industrial locations on the Island. The cost of doing business at Calverton must be attractive in contrast with other locations. Assuming that the main competitors are the industrial development areas at the other airports in Suffolk County, it then becomes important to look at funding sources to see if development at Calverton can overcome the advantages of more westerly locations.

Funding Sources

One criteria of feasibility is the amount of capital investment required, where the funds will come from, and who

must bear the cost. The major impediment to the creation of a new airport for cargo and industrial development (aside from political constraints) is the large amount of up-front capital. In the case of joint use of existing military bases, the major capital costs for land, runways, ancillary needs etc., is already in place.

Assuming the Navy will continue its ownership of Calverton, the issue of fiscal feasibility is greatly enhanced. This is particularly true in view of a number of financing programs available from the Federal and State governments designed to foster aviation improvements and job creation. The following discussion identifies several of the major programs.

FEDERAL FUNDING - The Airport and Airway Safety and Capacity Expansion Act of 1987 provides funding based on a priority ranking system for capital improvements such as runways, taxiways, apron areas, etc.

STATE FUNDING - New York State Dept. of Transportation - Aviation Funding is available on a shared basis in support of airport improvements such as runway taxiways, aprons, etc. The New York State Industrial Access Program (IAP) provides 100 percent capital funds for the improvement or construction of public roads and bridges related to economic development.

The program may be used to assist in improving access which, in turn, can

- increase the productivity and competitiveness of New York firms,
- improve the ability of New York's businesses to compete in a world market,
- support advanced technologies for growth of new businesses, products and processes,
- foster new and small business development,
- aid minority and women-owned business development and
- serve as a specific program to help New York State's economically distressed regions and communities.

IAP assistance is provided in the form of a grant/loan of up to \$1,000,000 for any single project. The IAP funding may be used for design, acquisition of property, construction and/or reconstruction of existing and/or newly located public access roads and bridges, curbing, sidewalks, lighting systems, traffic control and safety devices, drainage systems and culverts and other highway or bridge related work. The award is a 60 percent grant and 40 percent interest free loan repayable within five years of the completion of the project. Retail jobs are specifically excluded from assistance under the program.

COUNTY FUNDING - The Suffolk County *Industrial Development Agency* (IDA) is a public benefit corporation of the State of New York created in 1975, pursuant to Article 18A of the General Municipal Law. The purpose of the Agency is to promote economic development in Suffolk County by assisting in the

...acquiring, constructing, reconstructing and equipping of manufacturing, warehousing, research, civic, commercial or industrial projects.

In order to promote economic development the IDA is authorized to issue both tax-exempt and taxable industrial development revenue bonds. The Agency issues these bonds for businesses that either wish to locate or expand their operations in Suffolk County. Typical projects eligible for financing include the purchase and rehabilitation of existing buildings, the construction of new buildings, or the construction of additions to existing facilities. Machinery and equipment may also be financed with IDA bonds. However, in most cases machinery and equipment is financed in conjunction with the purchase of an existing building or the construction of a new facility.

The IDA acts as a financing conduit through which the transaction takes place. Although the Agency issues the bonds, it does not actually loan the money directly to a company. Rather a financial institution loans the funds to an applicant, through the IDA. Typically a bank or an underwriter will purchase the bonds and, in effect, make the loan. Essentially it is the responsibility of the company to discuss with lending institutions their interest in purchasing the

Agency's bonds to finance the project. However, an Agency representative can help arrange these discussions and suggest institutions which might be most receptive. The lending institution reviews the project and makes the credit decision as to whether or not to purchase the bonds. In addition, the company and financial institutions negotiate the terms and conditions of the loan (its length, interest rate, etc.) independently of the IDA.

The bonds are secured by the financial strength and credit of the applicant. Normally, the loan is secured by a mortgage on the facility financed with the bonds. However, additional guarantees and collateral may be required by the lending institution similar to what may be the case in a conventional financing. This means that IDA approval of a project does not automatically result in funding being available. The applicant is responsible for the repayment of the bonds. Neither the Agency, the County, nor the State guarantee any such indebtedness.

The Suffolk County IDA issues both tax-exempt and taxable industrial development revenue bonds for the acquisition, construction, and equipping of manufacturing commercial and civic facilities. Tax-exempt bonds are regulated by federal tax law. The interest income on tax-exempt bonds is exempt from federal and state income tax. Interest income on taxable bonds is exempt from State income tax only. In addition to the reduced interest rate on the bonds, an IDA financed project is exempt from paying sales tax, mortgage recording tax, and is eligible for property tax abatements.

There are five bond financing mechanisms available through the IDA:

1. **TAX-EXEMPT BONDS** - Manufacturing facilities can be financed with tax-exempt bonds.

2. **TAXABLE BONDS** - commercial non-manufacturing projects qualify for taxable bonds. In addition manufacturing projects which would not ordinarily qualify for tax-exempt bonds may be eligible for taxable bonds.

3. **TAX EXEMPT AND TAXABLE BONDS** - a combination of tax-exempt and taxable bonds can be issued for projects that include both manufacturing and non-manufacturing activities.

4. REFUNDING BONDS - projects which were previously assisted with tax-exempt bonds are allowed to repay/refund the outstanding principal amount of the old bonds with new tax-exempt refunding bonds bearing a lower interest rate. This is particularly attractive to companies that had bonds issued in the early 1980s, when interest rates were higher than they are now. Refunding allows companies to remain competitive in Suffolk County by reducing their facility costs.

5. CIVIC FACILITY BONDS - the New York State Legislature recently expanded the list of IDA eligible projects to include civic facilities. A civic facility is defined as any facility owned or operated by a not-for-profit corporation organized and existing under the activities in this State. Tax-exempt civic facility bonds allow a not-for-profit corporation to finance their projects at a lower cost than they would through conventional mortgage financing.

PRIVATE FUNDING -It is highly speculative to develop cost figures for industrial development at Calverton without knowing in greater detail the specific uses and users that will be attracted to Calverton. This is not a serious impediment though since it is possible to separate funding requirements into two broad classes. That would be those costs related to on and off-site improvements related to access and flight operations; and those costs related to specific private industrial development.

The discussion of Federal and State funding sources indicate the possibility of grant and loan funds to cover most of the added infrastructure costs at Calverton.

It is also reasonable to assume that the private industries will be responsible for the capital requirements of their individual construction projects as they would be whether they located at Calverton or any other industrial park. Table 6-1 summarizes the types of support available by area of responsibility.

TABLE 6-1
Funding Eligibility

	<i>Airport</i>			
	<u>FAA</u>	<u>NYSDOT</u>	<u>Sponsor</u>	<u>Tenant</u>
AIRPORT				
Property Acquisitions			x	
Easement Acquisitions			x	
Airport Access Roads	x	x	x	
Tree Removal/Obstructions	x	x	x	
Runways	x	x	x	
Taxiways (parallel)	x	x	x	
Rwy/Taxiway signs	x	x	x	
Navigational Aids(VASI,REILs ILS)	x			
Runway Lighting	x	x	x	
Fuel Farm			x	
Sewage Treatment Plant			x	
Misc. Improvements (maint)			x	
FBO				
Apron (Public)	x	x	x	
Hangars				x
Auto Parking				x
Tiedown Area	x	x	x	
PRIVATE				
Hangars			x	x
Aprons			x	x
Access Roads			x	x
Office Buildings			x	x
Industrial Park			x	x

CHAPTER SEVEN

Citizen Participation Advisory Council

The passage of two major environmental laws by Congress in 1972 gave impetus to the direct participation of the public in planning studies. The Coastal Zone Management Act of 1972 and the Federal Water Pollution Control Act of 1972, as Amended, contained requirements that any planning studies undertaken with Federal support must provide for citizen input. Ironically, the Federal government itself is not bound by such requirements, nor does this stipulation necessarily apply to other programs. Nevertheless, the principle is correct. Planning is a public process in every sense. It is carried out by governmental agencies and staff, often supported by private consultants retained by government to develop plans that affect the lives and affairs of the general public. Thus, it is most fitting that those affected have an opportunity to be an active part of the process.

The *Long Island Regional Planning Board* (LIRPB) has followed such a path since its creation in 1965. All of the agency's major studies were undertaken with strong outreach to the public. In the early days of the Board it soon became clear that every subject under consideration—including so-called motherhood issues—was controversial. It did not matter how meritorious the planning decision might be, there would always be some constituency in opposition. If the subject was open space preservation, one could count on conflict with developers and their lawyers, or those opposed to public spending. If the subject was highways or mass transit improvement, support would be almost universal—except where the improvement was to be made. This was expected since we are a pluralistic and democratic society. In most instances the overwhelming majority supported the Board's plans and some good resulted.

There were subjects that would be guaranteed to draw the ire of a larger segment of the public—no matter how important the public need. They were multi-family housing, particularly for lower income families, and airport planning. Each issue was guaranteed to draw local opposition. However, planning agencies have a responsibility to work for rational and balanced orderly community growth and not just seek public approbation by only addressing the more innocuous or the more popular issues.

Nevertheless, the Board had two commitments to uphold. The first would be to carry out to completion any planning assignment that legitimately falls within the rubric of comprehensive regional planning. The second would be to conduct such work in the most open public manner possible.

And so, at the beginning of this study, broad solicitation was made in the hope of creating a truly representative group of people to work with the staff throughout the length of the project.

Particular attention was given to wide dissemination of the date of the first organizational meeting by means of media coverage of the impending study. Anyone who called or wrote to the LIRPB and expressed an interest in joining the study was urged to attend. Special efforts were made to invite those who called or wrote in strong opposition to the study, or the expanded use of the airport, or of the Project Director himself. They were invited to join the advisory council in order to ensure that their voices would be heard.

Governor Cuomo indicated his strong commitment to the study by designating participants from the Departments of Transportation, Environmental Conservation, the Urban Development Corporation and his own Long Island representative.

Copies of the application to the FAA were distributed. The purposes and scope of the study were discussed and it was agreed that the working meetings of the council would be held in Hauppauge, Brookhaven and Riverhead on a rotational schedule since more than half the membership resided in eastern Suffolk.

The next two general meetings were held in Riverhead and Brookhaven Town Hall auditoriums and were met with staged protests organized by the North Fork Environmental Council. They interrupted the meetings but were given an opportunity to vent their anger. Yet their participation did serve several useful purposes.

First of all, several of the opponents identified the issues involved with airport operations that frightened them. This gave the study team a much clearer insight of how some residents viewed the character of their neighborhoods and

eastern Long Island. More to the point, what were objections to them clearly became issues that must be addressed by the study.

Second, in their quest to destroy the study process, the North Fork Environmental Council secured a pro bono appraisal paper from the Boston firm of Gillam and Gander which stated in very professional and clear language many of the issues that a comprehensive study should address. The opponents saw this paper (see Appendix D) as a manifesto which sustained their position that the joint use of the airport was totally unjustified. In fact, the paper served as a checklist against which the study team could verify that all pertinent issues were examined and dealt with.

Third, the notoriety produced by the opponents and amplified in the media, served to arouse an equally intense counter-response from other citizens who were just as ardently in favor of the study and the expanded use of the airport as those who were opposed.

One of the general meetings was held at the Calverton property in order to acquaint the members of the Advisory Council with the current operations and the portions of the field within the fence perimeter that could be available for industrial and freight operations.

It soon became clear that the input from the Advisory Council could be more effective if the work was divided into four committees which more closely would reflect the particular interests of each participant.

Four committees were originally proposed, i.e., economic, environmental, land use and transportation. The land use and transportation committees were merged into one because of the overlap of work.

Table 7-1 lists the committees and participants.

The agenda format at each meeting was similar. Any correspondence received and/or answered by the staff was read to the members. The main portion of each meeting involved a staff presentation of the work under development. If text material was available it was distributed to the Advisory Council with the request for responses from the

TABLE 7-1
Calverton Advisory Council

Economic Subcommittee

Justine Alechus	Rupert Hopkins
Sid Bail	Patricia Howley
George Beatty, Jr.	Connie Kepert
Lorrin Bird	Steven Kenny
Jake Bussolini	Andrew Malone
Hon. Michael Caracciolo	Tom McAteer, Jr.
Gordon Danby	Carol Mishkin
Lester H. Davis	Andrew Nowotny
Doug DiLillo	John Ofrias
Joseph Gergela, III	Mitchell Pally
Harriet Gilliam	George Proios
Betty Gore	John Roe III
Helga S. Guthy	Margaret Rothwell
Kathleen Haas	Ross Saddleire
Peter Hannigan	Edwin Schwenk
Edward Hernandez	Reginald Tuthill
Curtis Highsmith, Sr.	Dan Vornea
Vi Hogland	Sharon Weingarten

Land Use/Transportation Subcommittee

Jane Alcorn	Emily Karlovits
Justine Alechus	Connie Kepert
Sid Bail	Carol Mishkin
Jake Bussolini	Johanna Northam
Hon. Michael Caracciolo	John Ofrias
Judith Collins	John Pereira
Gordon Danby	George Proios
Lester H. Davis	Anthony Rubano
Doug DiLillo	Joseph Siladi
George Dickerson	James Stark
Joseph Gergela, III	Joan Stewart
Harriet Gilliam	Reginald Tuthill
Betty Gore	John Van Schoor
Felix Gucci, Jr.	Bob Van Sise
Helga S. Guthy	Peter Vellon
Tom Gwynne	George Velmachos
Kathleen Haas	Dan Vornea
Richard Hanley	Howard Young

Environmental Subcommittee

Jane Alcorn	Peter Hannigan
Mark Carney	Vito Minei
Judith Collins	Carol Mishkin
Ray Cowen	J.R. Naidu
Lester H. Davis	Johanna Northam
Walter Dawydiak	George Proios
Doug DiLillo	Mary Ellen Suhrhoff
Helga S. Guthy	Dan Vornea
Richard Hanley	

members. The majority of responses came from those opposed to the expanded use of the airfield who scrutinized every aspect of the work. This scrutiny was extremely valuable in that it brought into sharp focus the need to examine every assumption and statement of fact. The questions also led to the broadening of the list of alternative uses that should be evaluated (See Chapter 5).

Some issues were raised as questions. Some issues were raised as charges. In both forms they represented issues of legitimate concern that had to be addressed. It was also clear to the staff that some charges represented strategies designed to defeat the study that were not of legitimate concern and were based on either misunderstanding, misrepresentations, or outright fabrications. In either situation, none of the charges or claims were dismissed out-of-hand.

The following list summarizes the ten broad issue areas.

1. The noise generated would destroy the quality of life all the way to the Montauk lighthouse.
2. The residents of Wading River would have to move because of aircraft noise.
3. The joint use of the airfield would irreparably alter and diminish the quality of life in eastern Long Island.
4. Pilots jettison fuel which would poison the agricultural soils of Long Island.
5. The use of the property would pollute the groundwater system.
6. The study was totally biased because the project director is a handmaiden for the developers.
7. The study of a freight facility is merely a subterfuge for building New York's fourth major passenger airport.
8. The survey of freight operators was flawed, either deliberately or through incompetence.
9. The study should not even have commenced since a report of the FAA itself said cargo airports do not work.
10. Expanded activities would create unacceptable traffic impacts.

Issue 1: The noise generated would destroy the quality of life all the way to the Montauk lighthouse. The concern that joint use of Calverton would entail the stacking of flights whose circular holding patterns would embrace all of eastern Suffolk County and thereby create unwelcome noise all the way to Montauk is predicated on the assumption that operations at Calverton would be similar to Kennedy or other international passenger airports. This is simply not the case. For a fuller discussion, see Issue 7.

Throughout the four decade history of military flights at Calverton, the takeoffs and landings have been over water with no noise impact on the Hamptons. If Grumman continues military aircraft production and testing at Calverton, the same flight practices will continue.

The use of a portion of Calverton for civilian industrial and research jobs will not generate significant air operations. Therefore, holding pattern operations will not be required.

Issue 2: The residents of Wading River would have to move because of aircraft noise. The residents of Wading River and the scattered residences within four miles of the runways do have a legitimate concern. Examination of the noise profiles of the F-14 do indicate an impact on these homes. However, the noise profiles for civilian cargo aircraft would represent an improvement not a worse situation. A second concern is the frequency of flights. Here again, the combined military/civilian activities would be less than when Grumman was at its peak of production. Nevertheless, additional safeguards can be built into any cargo flights. These could and should include a prohibition on night flights after 11:00 p.m. and before 6:00 a.m.; diversionary takeoff patterns to avoid flights over homes; and sound proofing if the surrounding towns continue to allow home construction near the airport.

Issue 3: The joint use of the airfield would irreparably alter and diminish the quality of life in eastern Long Island. One of the issues raised by both opponents of the Calverton Airport Feasibility Study in particular, and other thoughtful citizens who are not necessarily opposed to the concept but nevertheless have concern for their perception of the good

life, requires that this issue be given very careful scrutiny and analysis.

Despite the fact that Calverton Airport has been part and parcel of the East End scene for almost half a century, and has not negatively impacted upon the quality of life, there are fears that unknown developments that might occur if joint commercial/military use were to take place, could so accelerate development as to change the character of the East End.

This is a legitimate concern and the study does address this issue in great detail. In order to establish a point of reference, it is worthwhile to take present stock of what the East End is in terms of its land use, its economy, and its environment. It is also essential to separate the real East End from the imagined or mythical East End. To a certain extent, the romanticized version of the East End is somewhat analogous to Jerusalem "the Heavenly City" or Rome "the Eternal City." Perhaps in one sense there are two communities. In the case of Jerusalem, the pious truly see a "Heavenly City". To the more pragmatic observer, the city may appear like all cities, congested, noisy, deteriorating in some areas, as well as being attractive in others, and mysterious and diverse.

Thus, in these terms there can also be claimed the presence of two East Ends. One being the historical image of a set of rural communities in a bucolic setting, surrounded by almost boundless natural resources of great beauty contained in its lakes, bays, ocean frontage, farms, terrain, and a mixture of historic and modern unique architectural styles characteristic of the East End. Part of this mental image is that the economy of the East End is predominantly agricultural and tourist in nature, and that the various communities, some of which are more than three centuries old, continue to be rural enclaves as contrasted with the suburbanization and urbanization of western Suffolk County and Nassau County.

A more objective view affords a slightly different picture. For example, let us look more accurately at the employment pattern, which is a better definer of the East End economy than top-of-the-head assumptions.

At the present time, the total labor force is estimated at approximately 51,000 persons, whose jobs fall under four broad groupings. Agriculture has approximately 2300 employees, which constitutes less than 5 percent of the total labor force. More to the point, even though Suffolk County continues to be the leading agricultural county of all counties in the State of New York, its gross total product is less than \$150 million. A second segment of employment consists of professional, professional specialists and administrative support workers. This group includes the entire white collar personnel found in medicine, law, government, education, and the clerical and support personnel necessary to these fields of endeavor. In the aggregate they total slightly more than 21,000 workers, or almost 45 percent of the total. If we then examine the blue collar and blue uniform workers who are engaged as operators, fabricators, laborers and protective services, we find another 5800 jobs, or 12 percent of the total. The last category, of sales and service workers, amounts to slightly more than 11,000 or 22.5 percent. The actual tourist direct dollar input attributed to hotels and motels, etc. is approximately \$150 million.

Therefore, if we look at agriculture and tourism, we discover that instead of these two activities constituting the economy of eastern Long Island, we arrive at an entirely different picture. If we assume all the sales jobs and all the service workers can be attributed to the tourist industry, which obviously would be an exaggeration, we would have to conclude that only about one-quarter of the total labor force relates to these two activities.

Historically the claims made on behalf of tourism, which certainly had a validity at one point in time, included items such as secondary housing, which were created in response to the second home desires of New Yorkers and off-Long Island people, who viewed the East End as their vacation mecca. That pattern, however, is changing. The nature of housing that has been built in the last decade or more has been constructed as year-round buildings and not the typical summertime vacation structures that one could find on Fire Island and other areas that are clearly vacation in nature. As the population ages, as more people take early retirement, as improved transportation

makes access to job centers in western Suffolk more acceptable, we will find more and more seasonal occupants becoming year-round occupants. In fact, this trend has been active for a number of years. This means that the East End is suburbanizing no less than communities to the west. Shelter Island, Suffolk's most isolated town in the middle of the Flanders/Peconic Bay, only reachable by ferry, has been virtually built out, at an average density of one-half acre and one-acre zoning. The Village of Greenport has a residential zoning density as high as the Village of Babylon in western Suffolk County. The Town of Riverhead, whose maximum zoning is one acre residential, with a strong segment of its housing stock on small lots, has a higher density than communities in Oyster Bay in Nassau County. Even in a strongly agricultural town such as Southold, the residential enclaves such as Nassau Point have been largely built at one-half acre densities. All six of the hamlets in the Town of Southold have residential areas with houses on lots as small as 40 x 100. Thus, the reality is that there are many areas throughout eastern Long Island that are already suburban in nature.

This portrayal is not meant to suggest that tourism and agriculture should not continue to be supported, protected, and hopefully enhanced. The major benefit of agriculture to the quality of life on the East End is that these activities do provide vast expanses of open space that if protected, will not be cut up into subdivisions of "ticky-tacky houses on the hillside." The agricultural industry also represents a way of life, which in large measure is the quality of life of the East End. One should not lose sight of the fact that agriculture on Long Island has had a three century continuous history of quality production. No other area of the United States, with the exception of some of the farms left in Massachusetts and Connecticut, can make such a claim. In fact, the first cattle ranch in the United States was created in Suffolk County in the 1600s. Therefore, if agriculture is lost, it will undoubtedly be supplanted with suburban development and the eastern communities will not be able to be differentiated from Smithtown or Huntington, except that there would not be an adequate job base to support the services necessary to maintain a quality of life.

The direction, therefore, is to plan for rational, orderly, balanced growth which would accentuate the features to be retained while not losing the amenities that are associated with the East End. **Can this be done? It can and must be done.**

From an economic point of view, Long Island has sustained the worst recession since World War II over the past three years. At the present time, the unemployment rate for Suffolk County in total hovers around 8 percent. For the East End it is almost 20 percent higher-of the 51,000 potential persons in the labor force, more than 6,000 are currently unemployed. Home foreclosures, which are a harbinger of hard economic times, have increased in Suffolk County four-fold as a result of the recession. This brings us to the nub of the issue. What type of planning should occur to achieve the mutually beneficial objectives of preserving the quality of life, enhancing the East End's economic status, reducing the unemployment pattern, and protecting the environment at the same time?

The Towns of Southampton and East Hampton, which enjoy the largest segment of reasonably wealthy primary and secondary home owners, have done a relatively good job in maintaining density control by the institution of three, four and five acre zoning. If they were to take more aggressive interests in mandatory clustering and transfer of development rights, they would achieve reasonable growth, while at the same time maximizing the permanent protection of large areas of open space. The future of Shelter Island is pretty much what you see is what you are going to see. The acquisition of the Gerard Estate by Nature Conservancy, means that one-third of the entire land mass of Shelter Island is being permanently preserved. The Town of Southold, which has become, at least visually, the major agricultural town of the East End with its lovely vineyards, orchards, nurseries and vegetable farms, has done a reasonable job in instituting two-acre zoning, but obviously if this land use pattern is to be preserved more stringent steps have to be taken to maximize the preservation of the remaining agricultural lands. Riverhead, perhaps the most urban of the eastern five towns, has the most to do. The one-acre zoning is a guarantee that Riverhead will be no

different whatsoever in land use character than Nassau or western Suffolk towns that ironically in some cases have more restrictive zoning than Riverhead.

It is also important to note the relationship and impact of Calverton Airport on the Town of Riverhead since the ASA is totally within the boundaries of the Town. The Grumman Corporation currently pays in excess of one million dollars to the municipality in lieu of property taxes. If the property is used for joint military/commercial uses, the town would be the beneficiary for additional tax payments. Conversely, if Grumman terminates its activities the Town will have to adjust its expenditures and/or raise taxes. Commercial use of the Calverton property would also mean employment possibilities for Riverhead residents. The downside to these arguments is that the economic advantages have to be weighed against the quality of life issues raised by residents near the airport who would feel more secure if aircraft operations were eliminated.

Where do we go from here? There is only one way that the farms of Suffolk County can be preserved in perpetuity—and that is by removing the development potential from these lands. The Suffolk County Farmlands Preservation Program, utilizing the purchase of development rights, is one direct solution. The Towns of Southampton, East Hampton and Southold have supported the County's effort by instituting similar programs through local referenda.

At the present time less than 10,000 acres are permanently preserved. If the above discussed objectives are to be met, a critical mass in permanent protection of at least 30,000 acres must be achieved. That means the existing program is only one-third of the way towards success. Every other planning tool must be used since government obviously will not have totally adequate funds to do the entire job. Riverhead should place all its agricultural lands immediately into at least a two-acre zone. Southold did this and the agricultural community did not suffer. These lands should be actively subjected to mandatory clustering and also to the transfer of development rights (TAR) so that anywhere from 50-80 percent of the lands could be permanently protected in the event development is to occur.

And now, the crux of the debate. The Long Island Regional Planning Board is conducting a feasibility study of the joint use of Calverton Airport for the prime purpose not of destroying the East End, but of stabilizing and protecting the East End. This facility in its heyday employed over 3000 workers, mainly from the East End. The airfield is buffered by already protected lands, which assure that the general land use compatibility will continue even if the field is partially developed for industrial and freight activities. Since the transportation network is generally sufficient relative to the needs of development at the airport, and since development would occur on the field in areas that are not environmentally sensitive, and since there is a potential to create 10,000 to 15,000 jobs at full development, which could reduce the unemployment pattern in the East End, and at the same time provide additional tax revenues for the Town of Riverhead, one has to honestly ask how the quality of life for the East End is being negatively impacted upon. When Grumman was at its heyday, the daily testing of non-noise attenuated high performance military aircraft did not ruin the East End. The far more limited freight operations related to industrial freight operations must certainly have a far less impact. If one considers that the Type 3 engines now being utilized are far more quiet than the earlier Type 2 engines and if one eliminates the myth that pilots discharge fuel which will pollute the atmosphere, the water and the farms of eastern Suffolk County, it becomes clear that the real problems of quality of life for the East End do not revolve around the issue of Calverton but inescapably relate to the zoning and subdivision decisions made on a daily basis by each of the eastern towns. It is the local Town Boards in their daily actions that have the power to determine what the future of the eastern communities will be.

Issue 4: Pilots jettison fuel which would poison the agricultural soils of Long Island. The representative from the North Fork Environmental Council has raised the charge that pilots dump or jettison fuel and therefore the use of Calverton for commercial operations would contribute to the contamination of the agricultural lands of Suffolk County. A response from the FAA on this question is quoted directly from their letter.

...Specifically, the Federal Aviation Administration's (FAA) policy on fuel dumping is that it is only done on an emergency basis. Aircraft only use this provision when the flight is in danger, and often only on aircraft that have higher landing weights than operation manuals prescribe (typically international, or intercontinental flights shortly after takeoff). Because of the high cost of aviation fuel, and also due to the dangers, fuel dumping is often a last resort effort to lower the weight of the aircraft to enable it to land safely.

The FAA has specific procedures for this procedure outlined in the Airman's Information Manual. Simply stated, the pilot notifies Air Traffic Control that an emergency exists and fuel dumping is required. The controller then tries to climb the aircraft away from land over the ocean, if possible, and up to an altitude high enough for fuel to dissipate into the atmosphere. Other aircraft are then advised of the fuel dumping, and asked to remain at least 2,000 feet away from the aircraft dumping fuel.

In the event that an aircraft cannot accommodate a climb while dumping fuel, the FAA Eastern Region has instituted a policy that requires the Air Traffic Division's Environmental Protection Specialist to be notified immediately. This staff member has extensive experience in the environmental protection field and is responsible for notifying the appropriate agencies, including the Coast Guard's National Response Center, and the Environmental Protection Agency, who are tasked to respond to emergency chemical spills.⁴³

In addition, Mr. David L. Mudd of the North Fork Wine Services, a former airline pilot, also responded in a letter of August 21, 1992 stating:

...The dumping of fuel in the air is an emergency. If the Captain decides to land over weight, he takes a chance of landing much faster than normal or he can dump fuel so his landing speed and roll will be shorter. Dumping of fuel is at a speed of 180 to 200 knots plus, and at that speed and altitude, the fuel is atomized in the air before touching the ground.

Another member of the Advisory Council, Captain G. J. Dickerson, a retired American Airlines pilot also responded:

...I have also heard Sherry Johnson state that it is normal procedure for international jet flights arriving from Europe to dump fuel on your homes and farmlands before landing. I flew international flights, and that statement is absolutely ridiculous.

I've only dumped fuel once in my flying career and that's when I took off from San Francisco and the landing gear would not retract. I was overweight for landing and flew far out over the Pacific and dumped at a high enough altitude so the fuel vaporized before reaching the surface.

I've been on several committees and unfortunately find that if people don't research and investigate the subject thoroughly or want to mislead the public they will resort to PEHF-TAC. That stands for panic, emotional, hysteria and fear tactics. It beats logic every time unless others are willing to participate.

P.S. Show me a captain who dumps thousands of dollars of fuel overboard, unless in an emergency, and I'll show you a pilot without a job.

Issue 5: The use of the property would pollute the groundwater system. It is accurate to state that the past practices of the Calverton facility were not in the best interests of protecting the groundwater. Two locations on the site may, in fact, be close to superfund designation. It is also accurate to state that if the Calverton facility were to be built today, and not in 1952, it probably could not have met current SEQRA requirements. The entire property within the fenceline is in one of Long Island's *Special Groundwater Protection Areas* (SGPA) and as such is also a State designated *Critical Environmental Area* (CEA). Therein lies a legitimate conflict. If the field were not there, it would not receive approval to be built. However, the field is there and it pre-dated all current environmental laws.

This means that if any expanded use is to occur, it must be subject to the most stringent environmental review with adequate safeguards to ensure no additional groundwater contamination could occur.

Issue 6: The study was totally biased because the project director is a handmaiden for the developers. The best test of whether or not the study is biased is to read the document and then draw one's own conclusions. It must be observed that the real question is not the intuition, predilection, or even the thinking of the project director, but does the study demonstrate a feasibility of joint use? Since the study was conducted in the full view of an active Advisory Council, and widely covered in the media, the key question is do

the people of Suffolk County have enough information to form their own opinion on the subject?

Issue 7: The study of a freight facility is merely a subterfuge for building New York's fourth major passenger airport. This issue lies most closely to the heart of the debate. The greatest fear and concern expressed by the opponents to the study is that joint use today will inexorably lead to massive passenger operations tomorrow. All other nine issues revolve around this core concern. While some citizens would opt to close down Calverton and plough up the runways, most of those who were in communication with the staff indicated that they can live with what exists, they can even live with limited commercial activities. They cannot abide the concept of a Kennedy-type operation. Perhaps the following observations will clarify the position taken in this study.

A good beginning would be to define the terms *transfer airport*, *wayport*, or *Remote Transfer Airport*.

In the first instance, all of these terms relate primarily and predominantly to passenger operations. The terms are also interchangeable and to quote from Special Report 226, published by the Transportation Research Board in 1990, entitled *Airport System Capacity-Strategic Choices*:

...one way to relieve the burden on congested airports would be to separate transfer from origin-destination traffic by providing facilities devoted exclusively to serving the transfer function.

This concept, known variously as wayports, remote transfer airports, or super-hubs, has received considerable attention in recent months. It has proven controversial, in part because of confusing terminology and in part because of a lack of common definition of how such an airport would operate. In essence, the concept of dedicated transfer airports envisages large facilities, located at some distance from major metropolitan areas, that would serve as nodes for long-distance air travel routes.

The report goes on to indicate a list of factors and concerns of why this concept has not proven feasible thus far

From the beginning of the Calverton feasibility study, the point was stressed numerous times that although the application to the FAA listed wayports as one of the several al-

ternatives that would be examined, it was already clear that the Long Island Regional Planning Board could not support passenger operations. During the course of the study, the evidence has become overwhelming. For example,

...a large modern airport may require 20,000 acres of land for runways, and other aeronautical facilities, terminal building complexes, and landside roads and parking. To this must be added additional acreage for surrounding noise buffer zone.⁴⁴

The total available land for airport development at Calverton is less than 3000 acres. When all factors are considered there is less than 1000 acres available for development beyond Grumman's usage. In addition, the airfield has one predominant (wind pattern related) 10,000 foot runway. To accommodate civilian/military usage for passenger operations would require multiple runways. There is no physical possibility of building additional runways.

More to the point, the interest in the possible use of Calverton for cargo operations is for job and tax base generation. Wayports, even if feasible (which is not the case) do not achieve that objective.

It must be understood that the Calverton jetport was built to accommodate Grumman. The flight operations are secondary to the production activities. In similar fashion, civilian job creation is the prime objective. Aircraft operations to serve that function means that very limited flight operations can be the case and still prove feasible.

Issue 8: The survey of freight operators was flawed, either deliberately or through incompetence. This issue is discussed in Part 4 of Chapter 2. The key point is that the written questionnaire resulted in the same findings as the verbal interview survey. The purpose of both surveys was to determine if freight forwarders would have any interest in a Calverton location. If so, that activity would be one of several commercial activities that could occur. The overall feasibility of commercial usage envisages a number of possible activities and is discussed in Chapter 5.

Issue 9: The study should not even have commenced since a report of the FAA itself said cargo airports do not work. The FAA report cited is entitled *A Feasibility Study of Regional Air-*

Cargo Airports, Washington, D.C., August 1991. It does not categorically state that cargo airports do not work. It does state:

...The question remains whether an air cargo airport could succeed if it were developed for other reasons besides relieving congestion, such as to encourage land development or stimulate economic growth. There is no promising model at this time. Substantial efforts to develop Stewart International Airport in Newburg, New York, and Huntsville International Airport in Huntsville, Alabama, have not yet attracted a large part of the air cargo market. The only clearly successful recent examples are the sorting facilities of small-package, express-delivery services, such as Federal Express in Memphis, Tennessee, United Parcel Service in Louisville, Kentucky, and Airborne Express in Wilmington, Ohio.

The staff agrees that to build a new airport solely for use as a freight or cargo airport is risky if not economically unfeasible. The proposal under consideration at Calverton is not to build a new airport. Calverton Airport exists. This means that the cost of developing the airfield has already been borne by the United States Navy. Thus, the real test of feasibility is not to be measured in sunk capital costs, but in terms of attractiveness to industrial users who would only have to bear the costs of their own operations and not the costs of land purchase, runway construction, etc.

It is also important to note that the motivation to evaluate the potential for joint use is not to use Calverton in order to relieve the Port Authority airports. The prime interest is to examine whether or not joint industrial usage would be of

economic benefit to Suffolk County. Therefore, the level of air traffic can be moderate and still prove to be feasible.

Issue 10: Expanded activities would create unacceptable traffic impacts. The level of usage possible at Calverton when fully developed would require modest road improvements as shown in Chapter 4. The point to keep in mind is that these improvements to the highway system can easily be justified as a result of existing and anticipated growth in eastern Suffolk County. Again the debate hinges on the opposition to passenger operations. The traffic generated by passenger traffic would necessitate major highway expansion that could affect the nature and character of the surrounding area.

In the review of the draft of the first seven chapters of the study that was submitted to the entire Council, three detailed letters were submitted that deserve detailed responses. These responses covered issues that other members raised on specific issues of concern to them. They also serve as an indication of how seriously the members took their participation in the study, and therefore how invaluable their service was. Even though there may be some repetition with material already stated in the report their contributions were too important to be answered in correspondence. Therefore the balance of this chapter contains a point-by-point listing of their review accompanied with the staff commentary.

**Comments from Ms. Connie Kepert,
President of the Longwood Alliance and
President of Affiliated Brookhaven Civic Organizations**

Dr. Koppelman:

As a result of reviewing chapters 4, 5, 6, & 7 the following questions arose:

1. In Chapter 4, Land Use and Transportation, it is stated on p. 6 that over 3000 acres of farmland remain zoned for industrial use outside of the Calverton facility in the Town of Riverhead. The concentration of over 4 MSF of industrial development within the Calverton facility is, in our view of questionable benefit to the region as a whole. We again, briefly underscore the loss of demand that this concentration of industrial development will instigate in other areas. When this development is coupled with the possibility of industrial sprawl outside the fence it should be considered a major land use deterrent to the development of Calverton as an industrial hub. We would, therefore, like the L.I. Regional Planning Board to clearly state that the 3000 acres of industrially zoned land outside the fence, represents a deterrent to the development of Calverton as an industrial hub.

RESPONSE:- The LIRPB thoroughly agrees with your assumption and recommendation. The Town of Riverhead's 3000 acre industrially zoned land is a deterrent and would be superfluous. If Calverton is to be used for high-tech industrial development the Town should consider agriculture, housing and limited commercial uses for that land east of Calverton.

2. Closely related to our concern in question #1 is the continuation of 1 acre zoning on surrounding farmland in the Town of Riverhead. As has been pointed out within this study, a tremendous plus for Calverton as a Cargo port is the amount of open space which surrounds it. If some of this open space is in jeopardy of someday being developed it reduces the future compatibility of

Calverton as an air cargo facility with the land uses that surround it.

RESPONSE:- True! The LIRPB has been recommending a minimum 2 acre residential zoning for agricultural lands for years. Aside from airport issues, the preservation of Suffolk County's dwindling farmlands is a current crisis that can negatively impact on the "rural" quality of life ambience if these farms are developed.

3. It should be clearly stated that the largest job generator at the facility is estimated to be, industrial in nature, and not aviaional. We understand the potential benefit of 1 cargo flight a day to certain industries, however, this benefit must be weighed against the cost of increased distance to major arteries such as the Long Island Expressway. Further, the development of Calverton as an industrial hub requires the investment of public funds to improve access, on state, county and local roadways, and its development will increase traffic and congestion on these roadways in the areas where traffic mitigation measures are not being considered. Thus, we strongly feel that the development of industrial hubs should be located near major arteries such as NYS 495, rather than be planned around the marginal potential of a cargo port.

RESPONSE:- Your point is well taken and in fact the original Long Island Comprehensive Development Plan released in 1972 made the identical recommendation in identifying "Corridors, Clusters and Centers". However, the plan also identified the New York State Republic Airport, the Town of Islip's MacArthur Airport, and the U.S. Navy/Grumman Calverton Airport as part of the overall industrial development locations for Suffolk County.

4. On p. 7 it is stated that DPW recommends widening CR 46 from 2 to 3 lanes in each direction from NYS 495 to Longwood Road. This recommendation we assume is in response largely to the North Shore Properties Proposal. You then state that, "Even this capacity increase, however, would result in a level of service E for the road."

Please specify what this level of service means. Finally, it is stated that if Calverton is developed this six-lane cross section would have to be extended to NYS 25. We would like to know how much this six-lane extension from Longwood Rd. to NYS 25 will cost?

RESPONSE:- The concept of "levels of service" is defined as a qualitative measure describing operational conditions within a traffic stream in terms of such factors as speed, travel time, traffic interruptions, comfort and safety. An "E" level of service represents operating conditions at or near the capacity level. All speeds are reduced to a low, but relatively uniform value. Operations at this level are usually unstable, because small increases in flow or minor perturbations within the traffic stream will cause breakdowns. The cost is unknown at this time since no design or engineering studies have been undertaken.

5. In Table 4-3 on p. 20 you list the potential a.m. peak hour traffic on NYS 25 from CR 46. The Alliance would like to know the impact on NYS 25 from CR 21.

RESPONSE:- It is estimated that the peak hour traffic on NYS 25 between William Floyd Parkway (CR 46) and Rocky Point Road (CR 21) will be 200 vehicles per hour, which can be handled by the existing capacity.

6. In Table 4-4 you list Capacity improvements needed. Please provide us with an estimation of what these improvements will cost.

RESPONSE:- A rough estimate of the cost figures on the capacity improvement work cited in Table 4-04 is in the range of \$135 million, pending more detailed engineering estimates.

- 7 Chapter 5, Site Considerations. Considering the environmental sensitivity of the proposed site we would like to see the L.I. Regional Planning Board recommend prohibitions of certain industries which represent a threat to groundwater quality.

RESPONSE:- Relative to the site design, the LIRPB has taken precautions to avoid the identified environmental areas. Since this is an aviation facility located in a sensitive environmental setting the approach to any aviation-related development requires special review to prevent further degradation of groundwater quality. As to the industrial parks and their potential clientel, the Town of Riverhead zoning ordinance in concert with the requirements for environmental review should address the initial assessment of a potential tenant. The recommendation of prohibitions by LIRPB in the Calverton Feasibility Study would be redundant. These prohibitions and their protections for groundwater quality are part and parcel of the work done by this agency within the 208 Study, the SGPA Study and other studies. Any industrial development at Calverton would be subject to SEQRA, SPEDES and Article 7 of the Suffolk County Sanitary Code.

8. On p. 21 you state that in the event of the departure of Grumman and the U.S. Navy the 2,987 acres around the fence should be protected from development. I have enclosed a letter from Congressman Hockbrueckner in which he states that he has gotten approval for legislation which blocks the development of 3,234 acres of pine barrens surrounding the Grumman facility. I assume this means that, the land you refer to is currently protected. I would appreciate your comments on this.

RESPONSE:- Thanks to the stalwart efforts of Congressman Hockbrueckner the U.S. Navy lands outside the fence line are protected.

9. In Chapter 6 p. 1 you state, "It appears that the industrial development is the engine that would drive the use of the airport, rather than the reverse." We must stress that although we agree that because of the large amount of preserved open space in the area, and the pre-existence of an airport, a modest aviation facility, particularly an Aviation Maintenance Facility is warranted, and probably would be

economically beneficial. However, siting a major industrial hub within an SGPA, in a highly environmentally sensitive area, away from major roadway arteries is not warranted. We are sure that the L.I. Regional Planning Board can come up with more appropriate sites for a major industrial hub. Particularly in light of the fact that the existence of the airport will not "drive" industrial development.

RESPONSE:- The LIRPB in fact did locate a major industrial hub potential in the Longwood Alliance Community outside of the water sensitive areas in response to the need to relocate the proposed Grucci Fireworks Company from the midst of the Pine Barrens and to enable the Town of Brookhaven to rezone the then extant vacant industrially zoned parcels within The Special Groundwater Protection Area. We therefore are in accord to that extent. You also agree that since the Airport is in existence some modest nonmilitary use is warranted. The disagreement seems to hinge on the concern that Calverton may receive development at the expense of other industrial areas. Since the other areas are closer to existing development one could argue that Calverton would pose little threat in view of the past history of growth occurring in a west-to-east pattern.

10. On p. 2, & 3 you state that the cost of operation and maintenance of the Calverton facility including payments in lieu of taxes have been born by the Federal Government because Grumman has "charged back" these costs to the Navy. Will the proposed industrial uses also be able to transfer these costs of doing business to Federal Taxpayers?

RESPONSE:- The answer is yes and no. Grumman's expenses are part of the process of in effect working for the U.S. Navy. Private companies would have to pay for their buildings, equipment, etc. Therefore the answer is no. However, to the extent that private companies receive tax credits for job creation or benefit from small business loans or Industrial Development Agency

bonding; or benefit from road improvements or airport improvements supported by the FAA, then the answer would be yes.

11. On p. 8 it is stated that if Calverton is to be competitive with locations to the west it becomes important to look at funding sources. You then go on to list Federal, State, and County funding sources which might provide Calverton with a competitive advantage over other locations in the region. The L.I. Regional Planning Board is I am sure interested in the positive economic development of the region as a whole. Why then is it advantageous to boost one site over another?

RESPONSE:- The LIRPB is not boosting one site over another. All the economic development programs apply to all sites. We agree with our implied conclusion that there is no advantage to promote one area to the detriment of others. In regard to this current study, the LIRPB is not boosting Calverton over other locations. The LIRPB is evaluating Calverton to determine if it is feasible for joint military/civilian activities. The promotion of the site is a totally separate issue..

12. On p. 12 it is stated that IDA financed projects are exempt from paying sales, and mortgage recording taxes and are eligible for property tax abatements. In light of this, what level of taxes will in fact be generated by the proposed development? Will the proposed uses be asked to waive their right to file for tax abatements?

RESPONSE:- Property tax abatements are under the control of the local school district. The LIRPB is not recommending tax abatements. The Town of Riverhead in general and the school district in particular needs all the support it can receive.

13. We find it inappropriate that the only chapter which reflects citizen input begins by describing citizen involvement as: 1. Self-serving as in the case of developers. 2. Nimbyism, as in the case of siting transit improvements, or 3. Ridiculous, as in the case of the "curb your dog

story". We suggest that this entire section be stricken from chapter 7. I have enclosed for your review an article I wrote for the Civic Sentinel concerning Nimbyism and the greater good. I would suggest that a comparable introduction would be more appropriate for Chapter 7.

RESPONSE:- We agree! Chapter 7 has been rewritten. However, I would hope that you could accept the reality that nimbyism does exist, and that the greater good is not always, or not necessarily, synonymous with the most local or the most vocal desires.

14. On p. 7 and 8 we strongly emphasize that your list of issues is incomplete. The Alliance would appreciate your listing and addressing the following issues:

1. *The economic feasibility of the proposal is based on questionable assumptions.* Please refer to questions 1, 2, 5, & 7 in our review of Chapters 1 & 2; questions 2, 4, 6, & 7 in our review of Chapters 3 & 4; questions 2, 5, 6, 7, 8, 11, 12 & 13 in our review of Chapters 5 & 6, and finally, in our enclosed comments question 11 pertains to the sites economic feasibility. For your convenience I will attempt to briefly summarize the points made in the above listed questions:
 1. Locations outside of Long Island can offer lower labor costs, and foreign locations can offer reduced regulations to potential industries. Thus, reducing the demand for an eastern L.I. industrial hub. The labor force skills or brain power offered by a Long Island location will not appreciably counteract lower labor costs due to the fact that most jobs generated will consist of low paying jobs, ie. \$7.00 an hour.
 2. According to the L.I. Regional Planning Board's 1980 *Industrial Location Analysis*, "there currently is a supply of vacant industrially zoned land that far exceeds the need." Thus, the need for a large amount of additional square footage seems questionable.
 3. The East End holds no comparative advantages over other locations. Depending on the development of a common market in Europe to enhance this advantage is tenuous at best.

4. The interest from freight forwarders is low.

5. There is currently surplus square footage available in the existing FTZ at MacArthur. The demand for additional space is thus questionable.

6. The square footage recommended for a modest air cargo facility seems high, and thus, the job projections based on these recommendations are also high. Again, the above list represents a very brief summary of questions previously posed. For details please refer to the questions listed above.

RESPONSE:- All feasibility studies incorporate certain assumptions because the purpose of a feasibility study is to project future activities, activities that have not yet occurred. The assumptions that have been incorporated into this study are not at all questionable.

- 1) It is true that many locations outside Long Island can offer lower labor costs. However, the industries likely to locate at Calverton Airport are not "labor-cost sensitive." They are likely to be high-technology, high value added industries such as electronics, instruments and pharmaceuticals. These industries require skilled individuals and are generally willing to pay whatever wages are required to purchase the skills they need. While it is true that wages may be lower in other locations, the specific technical skills needed by these industries are not generally available in low-wage locations.
- 2) It is also true that there is excess vacant industrially-zoned land in certain Long Island communities. These areas do not possess the locational attributes needed by industrial firms. However, an industrial park at Calverton Airport with access to even limited air cargo operations would possess unique locational advantages for firms engaged in international trade, for firms that use just-in-time manufacturing processes and for firms that deal in perishable commodities e.g. food or pharmaceuticals.
- 3) The amount of industrially-zoned land is not the most important consideration. Rather it is the quality and loca-

tional attributes of each industrially-zoned parcel that determines whether it will be successful in attracting industrial jobs. The East End does not have an inherent locational advantage over other locations. However, it would derive a locational advantage based on the availability of international air cargo linkages.

- 4) Although it would appear that as of now, freight forwarders show only a "modest" or "limited" interest in utilizing air cargo facilities at Calverton Airport, history has shown that freight forwarders move to where their market is located. If Calverton were to attract even one air carrier, the operations of that carrier would ultimately attract one or more freight forwarders.
- 5) MacArthur's foreign trade zone does have available square footage. However, comparing MacArthur to Calverton is comparing apples and oranges. Calverton would have a locational advantage in terms of overseas air cargo linkages.
- 6) The 500,000 square feet for air cargo facilities is patterned after Stewart Airport's modest air cargo activity and the demand for space being experienced there. This air cargo element is in two parts with one being for a regular air cargo operation and the other for an integrated carrier.

2. *The effect of this proposal on existing L.I. industries is unknown.* We refer here to question number 5 in our review of Chapters 1 & 2. Briefly, imports to the Calverton facility will include fish and vegetables, we thus, question the effect of this increase in competition to our home market. We believe that this effect has not been adequately studied.

RESPONSE:- This is quite true. However, while it is likely that perishables such as pharmaceuticals might be imported through Calverton, it is highly unlikely that fish and vegetables would be flown in through Calverton. The reasons are as follows: Air freight is costly, it is generally justified only for high value products. Whereas phar-

maceuticals are high value products, fish and vegetables are not. If fish and vegetables were flown in by air, they would be so expensive that they couldn't compete with locally-produced fish and vegetables.

3. *This proposal may have a detrimental effect on the ability of other areas to attract industrial development.* We refer here to questions 9 & 10 in our review of Chapters 5 & 6. Again briefly the concentration of industrial development added together with a FTZ, and a cargo port will decrease the demand for industrial development in other areas, and will thus, exacerbate the property tax burden in those areas.

RESPONSE:- Quite the contrary. Industrial firms at Calverton would inject money into the Long Island economy in the form of salaries and the purchase of supplies and equipment. This spending would have a multiplier effect which could generate industrial jobs in other communities.

4. *A large transfer of public funds will have to take place in order to make Calverton successful.* We refer here to questions 4, 6, 10, 11, & 12 in our enclosed comments. We are referring to the cost of mitigational measures such as roadway improvements, tax transfers, and tax abatements.

RESPONSE:- Possibly, however, the site is already characterized by substantial sunk investment in airport facilities and is therefore Long Island's best potential location for an air cargo-related industrial hub.

5. *There are other more appropriate locations to develop a large industrial hub.* We refer to questions 1, 2, 3, & 9 of the enclosed comments.

RESPONSE:- Other than lands in Riverhead adjacent to the Calverton facility the only other large composition of land is found at Yaphank. However, plans are already underway for the utilization of these lands.

Summary - Although the participation of citizens naturally slows the planning process down, and sometimes results in controversy, citizen participation in the planning process should be viewed as an invaluable asset which when fully incorporated will enhance the planning process rather than impede it.

I would like to take this opportunity to thank you and your staff, for taking the time to answer my questions. I also want to thank all those citizens who volunteered

their time and energy to read the material provided, and formulate questions. To those individuals thanks for caring about the future of Long Island.

RESPONSE:- The LIRPB has always valued citizen participation in the planning process since it is invaluable, and your thanks is echoed by ours - particularly to those who were in strong opposition and had the stick-to-itiveness to see the study through to its completion.

**My Analysis of the Draft Copy of the Calverton Study:
Helen Guthy**

- p. 2-4 In Ch. 2 Table 2-1 Exports & Tables 2-2 Imports: What % is from Eastern L.I. market? Most tonnage & money is from Nuclear Reactors & Boilers. How many from L.I.? How many a year?

RESPONSE:- No data are available concerning what proportion originates in the eastern Long Island market. No further breakdown is available for the category "nuclear reactors". These data are presented to show the general volume and composition of air imports and exports. They are not specific to Long Island and have no direct bearing on Calverton.

- p. 2-7 States that there is no need for new cargo facilities. Aircraft capacity will keep pace with demand for future cargo. Air Cargo industry now has significant over-capacity between 40% & 50%. By the time current capacity is reached, new, larger, aircraft will be on line to absorb additional growth.

RESPONSE:- In the aggregate there is no need for new air cargo facilities. However, specific facilities in "niche" markets will be needed. For example, even limited cargo facilities at Calverton can be useful in serving international trade with Europe and at the same time would stimulate economic development in eastern Long Island.

- p. 2-15 States that all-cargo flights, from the 3 major airports, are not a problem.
- p. 2-16 Cargo at Calverton cannot be justified to alleviate airport congestion.

RESPONSE:- It is true that cargo flight do not now pose congestion problems at the three regional airports. However, cargo at Calverton can be justified in the name of economic development for the eastern end.

- p. 2-9 Table 2-4 has direct & indirect and induced jobs & wage impact. The numbers look impressive, but most of the impacts are from passenger activity. Eating & drinking, car rentals, hotel & personal services etc. There are no tables for cargo only. Stewart did not make money till they added passenger flights.

RESPONSE:- This table portrays the impact of the entire aviation industry. The data are not disaggregated by passenger versus cargo. No representation is made that this pertains solely to cargo.

- p. 2-10 Table 2-6 Lists economic impacts of L.I. Airports-MacArthur-passenger & related services. Republic-Corporate & private planes. Brookhaven E. Hampton & Suffolk County, none are cargo facilities. (MacArthur used to have one cargo flight but stopped because they could not even fill one plane a day.)

RESPONSE:- This table pertains to all L.I. airports. No representation is made that this pertains solely to cargo. However, the information is relevant in a general sense to show the economic importance of the aviation industry.

This report is clouding the facts with non-relevant information.

p. 2-10 & 11 Table 2-9, p. 2-13, Table 2-10, p. 2-14, Table 2-11 & 12, p. 2-15, Table 2-13, all of these tables cover N.Y. Metropolitan Region and N.Y. Customs District etc. Does not tell us what is from Eastern L.I. markets.

RESPONSE:- It is true that these tables describe air cargo activity in the New York Customs District & the New York Metropolitan Region as a whole. The information is provided to give background about the air cargo industry. There is no specific information about air cargo from eastern L.I. market. In fact, a cargo facility at Calverton could draw air cargo from the entire N.Y. region.

- p. 2-17 Since 1983, Stewart Airport has cost \$320 million in Federal & State money, plus \$100 million in private

funds and it lost money until passenger flights were added in 1990. In area it is the second largest airport in the U.S. Why is it having such trouble growing? According to the study: "...it is difficult to attract freight forwarders and convince them to route freight to locations other than major airports..."

RESPONSE:- Although Stewart Airport had a slow start, it is now thriving.

p. 2-18 Says it is pinpointing potential geographic sources of export commodities, and yet in the same paragraph it covers such a broad area as N.Y. City, South West New England, and Northern suburbs of Westchester, Orange, Rockland, Putnam, Dutchess & Ulster Counties & L.I. We still don't know what the L.I. market has.

RESPONSE:- Such a broad area was included because a cargo facility would draw from such a broad area. The Long Island market would be only part of the total market.

p. 2-18 Other pages, state that Calverton is well-suited to international cargo flights, but it never says why. Since, according to freight forwarders, in your interviews, the L.I. market is too small and most cargo will be trucked to & from the west on the crowded Expressway, how can you keep stating this?

RESPONSE:- Calverton is suitable for cargo flights to Europe because of its location on eastern L.I.

p. 2-29 I was upset to see the excerpts from the old cargo interviews still in the Draft report-when we all know that they misrepresent their companies positions, especially DHL.

If DHL was so interested in Calverton, why is there no reply from the second time? Or did you get an answer you didn't like & not print it?

If cargo at Calverton was in anyway feasible, Cargo Carriers would be standing in line and have shown an interest long ago. You keep stating that there is a mod-

est interest. I have seen no interest. You are almost begging companies to come out here.

RESPONSE:- We regard the old cargo interviews as valid and supported by the new interviews. We did not get a reply from DHL. There is modest interest given the fact that there are no available cargo facilities there at this time.

p. 2-38 States that firms use a foreign trade zone to maintain cost-competitiveness of their U.S. based operations vis a vis their foreign based competitors. How will this be effected by Clinton's plan for making U.S. competitive with foreign markets?

RESPONSE:- Clinton's program will in no way affect the value of foreign trade zones.

p. 2-42 Claims 10,000 jobs will be created, yet Stewart airport is the second largest in the U.S., in area, and after 10 years operation, has only 4,300 jobs. (After spending \$320 million in State & Federal money, and \$100 million in private funds). (Why was this cost not mentioned in the draft?). It was still losing money until passenger operations bailed them out in 1990.

RESPONSE:- Ten thousand jobs will be created at Calverton over a twenty year period, not all at once.

Why were we not given projections of what Calverton would cost us? You are guessing at everything else. You claim a certain number of jobs, buildings & road work & even how much per hr will be earned. You should be able to figure out the cost to the tax payers, unless you are afraid if they find out the cost, they will be very upset.

RESPONSE:- The report is not "guessing at everything else". Evidently you fail to comprehend the difference between projections based on analysis and guessing.

You wanted us to believe that you were doing the Env. study for us, but you had to do it to find out how much

acreage you had to work with and where you could build.

RESPONSE:- Editorial observation — no response.

p. 3-5 The original drainage pattern has been interrupted by construction of the existing runways.

RESPONSE:- The word “evidently” has been removed.

p. 3-11 Disturbance through previous land filling activities of the northernmost pond is evident.

p. 3-13 According to Nature Conservancy, more endangered species live here than anywhere else in the State of N.Y.

p. 3-19 Aircraft assembly & testing since the 1950's has polluted the ground water at 4 sites; North East Pond Disposal Area - Fire Training Area - Fuel Calibration Area & Fuel Depot. Three others worth mentioning are; former Coal Storage Area - former STP Leaching Field and North East Tower Area.

RESPONSE:- This is what is stated in the final report.

p. 3-20 You plan to build where there are moderate constraints. Apparently there is no place to build where there are no constraints.

RESPONSE:- There are constraints to development associated with **all** sites. You focus development on those locations where the constraints are the least severe. No change in text necessary.

p. 3-24 States that the Airport Study Area lies entirely in the Central Suffolk Special Ground Water Protection Area.

RESPONSE:- This is what is stated on new page 3-27. No change in text needed.

p. 3-26 Fig. 3-11 - Critical Env. Areas Map - the runways are just at the edge. Would they be included if Grumman had not altered the wetlands?

RESPONSE:- The question posed is hypothetical. The airport site has been developed. However, the entire airport is located within the Central Suffolk SGPA. All SGPAs will become Critical Environmental Areas if/when certification procedures are completed.

p. 3-29 The entire ASA is also located in the Pine Barrens. You have said many times, that if the airport had not been build before we knew its effects on our water, that it could not be build today. How can anyone with integrity enlarge it?

RESPONSE:- The fact remains that the airport **was** built in the Peconic River drainage basin; wetlands were destroyed and the system was damaged. The study does **not** propose **expansion** of the ASA. The conceptual plan targets facilities to locations that are distant from the river which are not associated with severe environmental constraints.

The effects of noise is judged on a 24 hr. time frame, not each flight. This makes the impact seem much less. Also, since we have little background noise, the impact here would be even greater. You do admit, p. 3-66, that each noise level could reach 90 decibels. It mentions closed doors and windows would make it better. By my observation, East-enders like to be outside. So, we have a problem.

RESPONSE:- The noise profiles clearly indicates that commercial flights are dramatically less in impact than the military flights that have occurred for years.

p. 3-45 States, in effect, there are at present no economically feasible examples of all-cargo airports in the U.S.

p. 3-48 Three airport examples are used: Alliance, Texas, is the only facility planned for all-cargo. The other two

have passenger flights. Even with all Alliance's advantages (money, space & no ground water to worry about), the facility has not been successful in its primary mission and is now serving as a multi-purpose reliever airport to Dallas/Fort Worth International Airport. What more do you need to show no-feasibility for Calverton Cargo?

RESPONSE:- Obviously the only answer satisfactory to you would be to have the study declare no feasibility what-so-ever. This is not the case. There is limited feasibility.

- p. 3-56 States-None of the alternatives envisions any scheduled passenger service. This statement is not strong enough to prevent passenger flights from ever coming here.

RESPONSE:- None of the alternatives envisions scheduled passenger service. This fact has been stated numerous times, with reasons given why it would not work.

- p. 3-58 Another contradiction - you state in order to construct all the operational & support facilities from the ground up, it's possible the stage 3 deadline may be reached prior to initiation of cargo operations. That is 17 years from now. Yet in Ch. 6, p. 7 it states that one prime factor that leads the staff to believe industrial & freight operations could be feasible, is that the challenge is not to build a new facility. It is already there. (The only things there are the runways, and according to Grumman, they need \$30 million in repair. That's why they need dual use.)

RESPONSE:- The Navy is not trying to determine the feasibility for joint use because of runway repair costs. These repairs are being made regardless of whether or not joint use occurs.

- p. 1 (4-1) Claims the impact of the airport will decrease the effects on the quality of life on the East end of L.I. Does that take into account the extra trucking and traf-

fic? And, the possibility of 9,000 people moving closer to where they work?

RESPONSE:- The context in which the airport's impact on the historic quality of life would be decreased in the number of aircraft movements and the fact that the anticipated civilian aircraft will be quieter than the military aircraft, both by design and also by law with the federal requirements for Phase III aircraft. It is a specious argument to assume there is an automatic diminution of quality of life with the advent of more people seeking to live closer to their workplace.

- p. 6 Brookhaven's plan wants removal of excess industrial zones & moved to less environmentally sensitive south Yaphank. How will a 10,000 job Industrial park, at Calverton, effect the large Industrial Park planned for Yaphank?

RESPONSE:- Obviously, there is some competition. However, the uses proposed for Calverton are air-related in contrast to the types of activities anticipated at Yaphank.

- p. 11 (4-10) The purpose of this study was to create East end jobs, but according to your estimates 90% of the work force will come from the west.

RESPONSE:- The purpose of this study was to examine the feasibility of a joint-use of the Calverton Airport with the U.S. Navy and Grumman. In the course of the study the potential of jobs was identified. The 90% traffic flow from west of Wading River Road on NYS Route 25 to the Calverton facility is reflective of the heavy use of William Floyd Parkway as a major access route. A review of land uses within the PSA (Primary Study Area) shows residences located south of both Sunrise Highway with the majority south of Montauk Highway and a large concentration at William Floyd Parkway. This does not mean that the eastern communities would not benefit. In all likelihood the residents of Riverhead would be the first job beneficiaries.

p. 19 Table 4-1 still estimates almost 12,000 jobs. I find this impossible. At its peak Grumman only had 2,600 people, and has about 2,000 now. Brookhaven Labs has about 3,500 people, yet you claim a moderate facility, employing almost 3 1/2 times that of the Lab. What do you consider large?

RESPONSE:- Table 4-1 does reflect 12,000 jobs. However, the total number of jobs at the site (in 7 million square feet of buildings) does not relate to the term "moderate". This term was used to describe only one segment of the development scenario - the potential air cargo activity, which was termed "modest operations - one cargo flight per day")

p.2-37 Of the approximately 12,000 jobs it is estimated that 10,000 will be in the industrial park per se, with the balance employed in the aviation-related uses, which is in line with your observation of Grumman's workforce at Calverton.

p. 21 Table 4-4 Plans major road work that will need to be done, especially if you include The Breslin, Mega Development, on Rt. 25, William Floyd, Wading River Rd. & Grumman Blvd. This will take millions more of our taxes.

RESPONSE:- This is not a question. If you are arguing that these other developments will precipitate the necessity for infrastructure improvements, you are correct. Remember that development **pays** taxes.

p. 11 (5-9) You have stated many times that due to restraints, there will not be room for passenger flights. The acreage available for building is 948. The space you have accounted for in all 3 scenarios is 520 acres, that leaves 428 acres still usable. if you add the acres from the runways (592) that gives you a 1,020 acre airport, larger than LaGuardia, almost as large as MacArthur.

RESPONSE:- The 948 acres identified under the subsection of "Site Development" is correct, but our site design usage is now only 494 acres. The lands not utilized in ac-

commodating the proposed uses of Scenario 3 are readily seen in Figures 5-6 and 5-7 which reflects the developments by runway within the parameters of identified constraints. In the Conceptual Development figures the unused lands are part of the buffers between and around the conceptual uses, therefore in a sense much of the 400 acres unused are part of the conceptual design. (No response to the LaGuardia reference). Other constraints include the inability to provide parallel or multi-runways.

p. 21 (5-13) The number of Grumman workers again is wrong. Not 9,000, but should be 2,600 at peak and 2,000 now. That's a gross exaggeration.

RESPONSE:- The number of Grumman workers figure has been corrected to reflect over 3,000 at its peak, with less than half that number in current employment at the Calverton facility.

p. 1 States that: "It appears that the industrial development is the engine that would drive the use of the airport, rather than the reverse. Industrial Dev. could be built anywhere, (already planned for Yaphank), does not need to be in such a water sensitive area.

RESPONSE:- This was already addressed.

p. 9 States again Federal & State Funding for runways, taxiways, aprons & improvement or construction of public roads.

p. 11 I'm very concerned how much this will cost us taxpayers. County Funding-Suff. Industrial development Agency acts as a financing conduit through which loans take place. It issues the tax-exempt & taxable industrial development revenue bonds, but through a bank. It seems that the company and bank negotiate terms of the loan independent of the IDA. Why doesn't the company go directly to the bank for a loan? Or does the government have to back the loan because private companies will not invest their own capital? If the company folds, who is liable for the rest, if IDA is involved?

It says normally the loan is secured by a mortgage. Since the Navy owns the property there will be no mortgage. What is used as security?

- p. 13 States again "The discussion of Federal & State funding sources indicate the possibility of grant or loan funds to cover most of the added infrastructure costs at Calverton."

RESPONSE:- IDA bonds do not cost local taxpayers.

- p. 1 (7-1) You have always made us feel that you were doing us a favor including us in this study. Now I read that "...any planning studies undertaken with Federal support must provide for citizen input..."

- p. 7 Even though you have addressed some of our concerns, you have always done it in a condescending manner.

RESPONSE:- Your observations are too subjective on your part for me ever to provide a reply that you would find acceptable. I have stressed at numerous meetings how important citizen participation is and how deeply it is appreciated. If the objective was to be condescending that has to be a view in the eyes of the beholders. It certainly was never my intent.

- p. 10 You criticize our love for the East end, calling it a mythical & romanticized attitude analogous to Jerusalem "The Heavenly City" or Rome "The Eternal City". I have lived here in Wading River for almost 20 yrs. and I still feel very mythical & romantic about it, and so does everyone I know. That is why we are working so hard to keep it that way.
If growth comes slowly, and fills a need, it will fit into the community. If you force it, you end up with big problems that can't be solved. You are forcing this cargo facility on people that see no need for it and don't want it.

RESPONSE:- The L.I.R.P.B. is not forcing anything. The purpose of the study is to provide the Navy with options for

joint use that might prove to be feasible. It should also be noted that in addition to those opposed to commercial use at Calverton, there is a less vocal but significant segment of the population who support the creation of jobs and tax base.

- p. 17 It says again about the large job potential, which could immediately reduce the unemployment pattern in the East end. On p. 3-58 you say it may not be a reality till stage 3 comes on line, that's 2010, or later if they get an extension. Ms. Kamer told us it would take 10-20 yrs or so depending on the improvement in the economy. An official at MacArthur told me that to reach to numbers of jobs etc., more realistically would be in 40-50 yrs. The whole area would have to build up a lot more to support this estimate.

RESPONSE:- You misread the report.

- p. 17 States that it's a myth that pilots dump fuel.

- p. 18 In a letter from the FAA, states that fuel dumping is often a last resort effort to lower the weight of the aircraft to enable it to land safely.
You claim if you fly high enough & dump, it will evaporate. But, pilots have told me, sometimes they don't have time if the aircraft is too disabled to ascend, they drop fuel wherever, whenever to get back safely.

RESPONSE:- Evidently the responses provided by professional pilots who also serve on the Advisory Council carry no weight with you.

- p. 23 Says the FAA Study of Cargo Airports does not categorically state that cargo airports do not work. Then you have a quote. What you should have included is the material just before your quote. It says, that it's extremely difficult & inefficient to consider separating cargo from passenger flights.
They knew this already, and could have saved \$500,000 and 1 1/2 years of worry & work for a lot of people.

RESPONSE:- The report factually states the case. We accept your opposition, but it should be kept in mind that the Navy could develop joint use without this study. It is to their credit that they wanted more information before acting.

I have found so much contradiction in this study, and left-out information that apparently did not suit your purpose. No matter what your own findings told you about cargo ports & the sensitive land in the Pine Barrens, you still insist that it is feasible. **Unbelievable!**
I hope no one uses this study and its conclusions, the information is very misleading and contradictory.

RESPONSE:- Too subjective for response. Evidently, nothing that could be produced in the study could sway your undaunted opposition, and that is understandable. In fairness, I think you would have to acknowledge that you were given every opportunity to be heard and to participate. Even if you choose not to accept the comment, I must stress that your participation was important and you and several of your associates from the Wading River Civic Association did help shape the final report particularly in identifying within the text your many concerns.

Comments of Peter D. Hannigan Manorville Taxpayers Association

Dear Dr. Koppelman,

As a concerned member of the advisory committee, as a member of the Manorville Taxpayer Association and as a lifelong resident of the area in question I am compelled to write and critique the draft copy of the feasibility study recently released. I am also conveying a few ideas/concerns of my own which I hope will be put to good use.

1. First of all I would like to see the listing of Advisory Committee members be amended to include only those names of individuals who have actively participated in

this study. Padding the list with the honorable mentions does nothing to promote the study's results. It does, in fact, smack somewhat of free advertisement for the elected officials currently in office. Unless they have had a direct input into this venture I feel they should not be given a "free ride".

RESPONSE:- The listing in the published report will list the active members.

2. Secondly, the study name itself leaves something to be desired as far as I'm concerned. Rather than Calverton Airport Feasibility Study I would prefer the use of the word Cargoport where Airport now stands. I realize that there is an existing airport at Calverton but I'm pointing this out with the hopes that it may quell some of the fears that local residents have concerning this being the forebearer of a passenger terminal yet to come. I applaud the study's non-passenger stance recommendations and hope this small change can be incorporated.

RESPONSE:- Your point is well taken. However, the title is the official one on the FAA grant application and must be the one used.

3. Another hurdle, I believe, that is to be crossed by this study is the much publicized one flight a day scenario for "modest" operations at Calverton. I believe that this information is obtained from Chapter 2 pages 37 & 38 respectively where the carriers DHL & Emery are referenced. I feel this report is given a "bad rap" due to the fact that some people have a hard time envisioning only one plane daily realizing approximately 10,000 plus jobs.
It is difficult for those that are not familiar with aircraft operations to realize that a plane does not have to land empty, nor do they realize the high cost of good involved, the high tech skills required to produce them or the mind boggling load capacities of some of the aircraft that would be able to utilize this top rate existing facility. The "minimal" operations of one flight a day is

only a beginning and would have to be expanded once the prime market opportunities are taken advantage of. Because of probably increase in the number of flights as operations grow it may be advisable to do some projections on a yearly basis. These projections may be able to show how many flights would be required with specific types of cargo and what it may grow to in the future if things go well.

RESPONSE:- The closest projections that can be made at this time "if things go well" is that the one flight per day may grow to four flights per day. It must be understood as you observe; that even one flight per day on a 747 cargo plane would represent a tremendous high tech industrial output. For example, if Calverton were used for aircraft engine or helicopter engine maintenance the flight requirements would amount to one or two flights a month.

4. Somewhat related to the preceding paragraph, I believe is the way the numbers that are presented in the economic development chapter are bottom line. That is to say they are what would be at full operating capacity. I feel these are somewhat misleading and should be presented in phases or yearly breakdowns. This would be more indicative of what would actually occur. I really don't feel the facility would be used at 100% operating capacity upon opening.

RESPONSE:- You are correct in stating that the facility would not be used at 100% capacity initially. In fact, it will take years to generate the 10,000 or so jobs. Nevertheless projections must state the "bottom line" or ultimate if the public is to receive a complete portrayal. Methodologically speaking, bottom line projections are reasonably accurate since the assumptions on which they are based relate to the total buildable land and the jobs that could be generated according to the various mixes of activities identified in the various scenarios. It is pure guesswork however to make phased projections on a yearly basis since this would depend on the actual firms that would come to Calverton.

5. Much has been said about the number of employees that have been employed at Grumman. The controversy is whether the numbers reported are actual or inflated. If the wrong numbers have been publicized due to the bureaucracy of a large corporation I can not lay blame on the feasibility study. The real controversy should be about the present lack of work at the Calverton site for the Grumman Corporation. The fact that 3,000 employees back in '78 has little to do with the 1,900 currently employed. The F14, A6 and the EA6B production lines are no longer running. What is keeping the Calverton facility operations is the E2C production line. This aircraft was formerly built in Bethpage but is now the only true production activity going on now. Relocation of several business offices to the Calverton complex has also kept the area viable. Comparing old and new employment figures is like comparing apples and oranges. Present economic conditions are nothing like the late 70's and without a sudden infusion of Navy aircraft contracts Grumman's future at Calverton is doomed. Because of the urgency involved, I believe the study should give thought to a combined use with Grumman utilizing the Grumman erected temporary buildings. This would eliminate, at least initially, the need to erect any buildings north of the runways. It may help to keep the Grumman/Navy relationship for awhile longer until public sentiment is more predisposed to a cargoport.

RESPONSE:- Your observations are reasonable but unfortunately present several obstacles. First is the concern for security. Both the U.S. Navy and Grumman have made it absolutely clear that non-military activities must be kept north of the runways in order to preserve Grumman's security. Thus, no mixing of uses would be acceptable in the 900 acres actively used by Grumman. Second is the fact that this study is to determine the joint use of the Calverton facility. This presumes that Grumman will continue in operation. If Grumman leaves we have no way of knowing whether the Navy will continue ownership or declare the property surplus. In such an eventuality the parameters of feasibility

would be drastically altered and the consequent options of cost, ownership, control, etc. would require an altogether different study.

6. "An improvement to the study, I feel, would be the inclusion of a map of the PSA which shows the majority of property owners bordering the Calverton grounds and buffer zones. This map could show the types of zoning, whether it be residential, business or commercial. It should also devote some time and thought to projecting what would happen to the property values if the commercial development of the airport were to take place. Therefore, all interested parties would know who stands to profit the most by the proposed changes.

RESPONSE:- There is a map depicting existing land use but aside from a delineation of the residential enclaves the ownership patterns are not shown except in a general fashion. The majority of the properties surrounding Calverton are in federal, county or municipal ownership with the exception of the sizeable area east of the airport currently zoned by the Town of Riverhead for industrial use. The position of the L.I.R.P.B. is that if the field is further developed for hi-tech jobs, the Town should consider rezoning their industrial parcels for less intensive use. The issue of who would profit is too subjective to respond to. The opponents to the use of Calverton claim housing values would decline. Although we found no evidence to support this argument and could make a case that property values in fact increase as intensity of land use increases, there is also a non-dollar value that must be considered. The opponents to the study are

not motivated by the desires for jobs, tax base or even an increase in their property values. Their bottom line is the preservation of their concept of the "value of life"

After giving this feasibility study much thought and time I have come to some conclusions. Attending many meetings over a long period of time and witnessing several memorable events have helped form my opinions. First of all, the study itself has been conducted in the most honest of fashions as possible from start to finish. As far as I'm concerned nothing has been preordained, decided or covert at all during the entire study. I refute all charges to this end made by other advisory committee members.

A number of well financed/organized groups have been extremely vocal in opposing any commercial development on the Calverton grounds. At every meeting they've had their chance to voice their opposition even though their comments were not part of some of the meetings' agendas. Personally, I feel the scenes these groups developed for the media & the benefit of the immediate audiences were more theatrics than substance. The majority of their claims are unfounded and are a direct result of (NIMBY) not in my backyard mentality.

I applaud you Dr. Koppelman for conducting such an open, honest, exhausting controversial study. My congratulations to you for maintaining your composure while under some very adverse conditions.

RESPONSE:- Thank you.

CHAPTER EIGHT

Recommendations and Findings

Introduction

During the regular Long Island Regional Planning Board meeting on April 21, 1993, a summary presentation of the study was made followed by questions and discussion among the Board members. At the conclusion of the comments the Board unanimously adopted a resolution to accept the report; and to convey the resolution and a draft of this chapter to the FAA as representing the completion of the contract between the FAA and the Board. A copy of the resolution is found at the end of this chapter.

The body of this chapter contains the opinion of the Board concerning the use of the United States Navy airfield at Calverton for joint civilian/military use. The first portion summarizes the Board's findings. The second portion discusses the Board's conclusions.

Findings

- Calverton Airport is located in Suffolk County at a site that is about ninety-seven miles east of midtown Manhattan and more than fifty miles west of Montauk Point.
- There are 2,913 acres within the fenced-in portion that comprise the operational airport including runways, supporting facilities and the majority of Grumman's production buildings. It is within this fence line that the study will assess the feasibility of whether or not joint commercial/military use of the airfield is practical.
- The U.S. Navy owns the 2,913 fenced-in acres as well as the remaining acres that act as buffer zones to protect the airfield from residential encroachment.
- The Grumman Corp. leases 944 acres within the fenced property. Grumman shares the construction and operational maintenance costs of the airfield with the Navy. In reality, Grumman's share of these costs have been charge-backs to the Navy.
- Analysis showed that Long Island has a high concentration of firms that produce commodities that are shipped by air.

- Questionnaire responses from air freight providers suggest a modest level of interest in using potential air cargo facilities at Calverton Airport
- If Grumman were to leave there would be a loss of 2,500 jobs and \$100 million from Grumman's payroll at Calverton. The Town of Riverhead would also be deprived of approximately \$1.1 million in revenues.
- The land available for industrial development could generate approximately 10,000 to 12,000 jobs on-site if used for hi-tech production and/or research. Warehouse operations would be less labor-intensive. It should also be noted that every basic new job created at Calverton has a multiplier potential of approximately 2:1. Thus, the job generation could reach 20,000 for the work force of Suffolk County.
- In 1930, the central portion of the Airport Study Area (ASA) consisted of undisturbed woodlands. These woodlands were extensively altered as a result of runway construction and industrial development in the 1950's.
- An analysis of developmental constraints was conducted for the ASA for the purpose of locating those sites which make them the most suitable for potential development. In total there are 946 acres in the east and west sectors combined where developmental constraints are moderate.
- The entire ASA is located within the Central Suffolk Groundwater Protection Areas and the Suffolk County Pine Barrens Zones and as such is subject to strict development controls.
- Studies of the existing military and the projected commercial aircraft noise show only a minimal increase in the 1991 noise levels established by the military aircraft operations.
- The Primary Study Area (PSA) has a large amount of open space and institutional uses along with low-density housing and some community clusters.
- Suffolk County plans for the Calverton area are similar to the latest proposals of the three towns that are within the PSA.
- The three towns within the PSA are: The Town of Riverhead, Town of Brookhaven and Town of Southampton.
- The Navy has expressed its support for Calverton because it is a superb military facility in that the property is well buffered and the restricted air space over the At-

lantic Ocean, south of Long Island, provides exclusive air operation.

- The proposal for joint use is vigorously opposed by the residents of Wading River, Baiting Hollow, and the east end residents from other communities who fear that even limited initial use may eventually lead to a busy passenger operation.
- The Board also finds that severe expansion potential is not feasible since the construction of multiple runways is not physically possible.

Conclusions

- Calverton Airport's location makes it a particularly good candidate for moving air cargo to and from Europe.
- There is sufficient air cargo potential to support a modest air cargo operation at Calverton based on information obtained from interviews with Long Island manufacturers, freight forwarders and other air cargo providers. In addition, Calverton could accommodate an overflow of air cargo activity from Kennedy Airport.
- If Grumman were to withdraw from the Calverton facility, the Town of Riverhead would lose payments in lieu of taxes and the loss of 2,500 jobs would further increase the east end unemployment situation.
- The presence of even a modest size air cargo operation would serve as a catalyst for developing an industrial park. Such an industrial park could ultimately employ a significant number of workers, generate additional revenues in lieu of taxes, and encourage desirable forms of economic development in eastern Suffolk and throughout the Long Island area.
- Potential development of the ASA for joint use should be targeted to acreage where developmental constraints are moderate as opposed to locations where the constraints are severe.
- With proper noise mitigation measures the airport will be compatible with the surrounding communities in the event of commercial military joint use.
- The majority of the land surrounding the Calverton Airport is generally compatible with the noise patterns emanating from the Calverton facility.

- An option the Navy could follow in the event of a Grumman pullout would be to "mothball" the facility pending future need.
- Under any condition for joint use it is presumed that the Navy, as owner, would establish the conditions of leaseholds and operations consistent with the Navy's interests.
- It is reasonable to expect that the commercial users would have to assume a fair share of the operational costs, including payments in lieu of taxes.
- A management mechanism would have to be created to operate and manage the commercial portion of the property.
- Assuming the Navy will continue its ownership of Calverton, the issue of fiscal feasibility is greatly enhanced.
- It is estimated that an investment of \$71 million of airport infrastructure would be needed to meet costs of on-airport development items. Another \$22 million for off-airport road capacity improvements would also be required.
- The Board does not support passenger operations at Calverton.
- The Board concludes that it is feasible to foster joint commercial air cargo military activities at Calverton Airport.
- The Board also concludes that high quality, high value research and development such as contemplated by the Long Island Research Institute would be a most suitable activity at Calverton.
- The Board recognizes the pro and con arguments generated throughout the Suffolk County community and agrees that there is merit on both sides. The Board concludes that the potential for economic enhancement can be achieved without sacrifice to the environment and the general quality of life for eastern Long Island, and endorses the plan as developed by staff.

The following resolution was unanimously adopted by the Long Island Regional Planning Board at its regular meeting held on Wednesday, April 21, 1993, Hauppauge, New York.

- WHEREAS, the Long Island Regional Planning Board has conducted a feasibility study pursuant to a contract with the FAA concerning the joint use of Calverton Airport, and
- WHEREAS, the staff has completed and submitted to the Board the final draft of the study, and
- WHEREAS, the Board has given serious consideration to all the factors involved, and
- WHEREAS, the Board is concerned that the under-utilization of the Calverton facility, or indeed the departure of Grumman Corporation from Calverton would produce a severe negative economic impact on the Town of Riverhead, and
- WHEREAS, reasonable, limited joint use could be a job and tax base benefit, and
- WHEREAS, this use would be limited to industrial development and research as set forth in the study, and
- WHEREAS, the configuration of the property as well as the position of this Board does not support now or in the future commercial passenger operations at Calverton, and
- WHEREAS, within such limitations, in the Board's opinion, the use advocated would not be detrimental to the quality of life for eastern Suffolk County, particularly in view of the fact that the military operations over the past four decades have not impaired the character of eastern Suffolk County, Be It Therefore
- RESOLVED, That the Long Island Regional Planning Board goes on record as adopting the findings of the report entitled, "Airport Joint Use Feasibility Study", and the accompanying summary report entitled "Summary - Airport Joint Use Feasibility Study", and Be It Further
- RESOLVED, That this resolution and the findings and conclusions of the Board be included in the study and submitted to the FAA in completion of our contractual agreements.

APPENDICES

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APPENDIX C

Application

Needs And Objectives Of Study

1. The Nation's Reliance On Airline Travel, And The Future of the National Air Transportation System

America entered the Jet Age in 1959 with the entry of the Boeing 707 jet-powered aircraft into the national commercial airline fleet, since then, the United States economy has become heavily dependent on the access to domestic and world markets and the ease of travel and shipping provided by the nation's air transportation system.

Every point on the globe is now measured in either "airline hours needed to travel there" or the time and effort it takes to send a voice, fax, text, video, or data message to that point using new technologies - the fax machine, earth stations and satellites, fiber-optic lines, computer, etc.

We are truly a global village, as first described by the author Marshall McLuhan, with a totally interdependent world economy now firmly in place. The emergence of a United Europe in 1992 will further secure this interdependence in ways not yet imagined.

A new service-oriented segment of the American economy has emerged over the past quarter-century which is absolutely reliant on instant communications and low cost, frequent travel (by air). The United Nations predicts that by the year 2000 the single most important sector in each nation's economy could be "travel" (impacting on travel, tourism, communications, hospitality, accommodations, currency transfer, other aspects of local economies).

The U.S. now has the most sophisticated, highly-developed air transportation system in the world. This system, expanded dramatically during the administrations of President John Kennedy and President Lyndon Johnson to both accommodate and embrace new technologies such as the jet airplane, has enabled the U.S. to literally dominate many world markets.

The preservation of the nation's transportation systems, and the ability to expand the systems to meet demands, is critical now to the future economies of the U.S., New York State, and the Nassau-Suffolk community in particular.

The federal government is concerned that the nation's airports, airways and airline systems could be swamped by demand in the 21st Century, and that if adequate steps are not taken today to improve the overall system and expand capacity, then safety, economy, and the efficacy of the system itself could be sacrificed in the attempt to meet demand.

The top 100 airports must move 99% of the passengers; three out of four trips by air are between just 25 city-pairs, many in the Northeast, one being a destination here in the Long Island area (the New York co-terminal, including LaGuardia and Kennedy airports). Capacity at these facilities has almost reached the practical limits of expansion.

The Federal Aviation Administration recently prepared a special report - *Airport System Capacity: Strategic Choices* - which focusses on the steps which must be taken short and long-term, and the difficult choices facing not only the nation's air transport system, but each community that is a part of this system. There are implications for the Long Island market in the FAA report.

The report noted...

Intercity passenger transportation has undergone sweeping and perhaps irreversible changes in the last half century. Bus and rail account for a very small and dwindling share of intercity trips, having been replaced by private passenger cars using the interstate highway system, and more by air.

The boom in air travel has completely altered the modal distribution of intercity travel. Today, nearly one-fifth of all intercity passenger-miles are by air - twice the 1970 level.

This year the air transport system will carry about 1.3 million domestic and international passengers each day. Early in the next century, this number could reach 2.5 million per day, or one billion passengers per year. If the growth contin-

ues, the U.S. air system will have to accommodate 4 to 5 million passengers daily, more than triple today's volume of traffic.

Worldwide, 450 million passengers flew during 1989; this figure will exceed 800 million in just nine years (2000).

Recent growth has been spurred by the American (Airline) Industry's deregulation (in the late-1970s), a healthy national economy, reduced fares, an increased desire to use airline service to travel more than 200 miles. These trends began in the U.S. and are spreading to all corners of the globe.

The factors that will affect this trend include: state of the national economy; the cost of air transportation; the value placed on air transportation by society for business and personal travel; population trends; the development of new air and surface transportation and telecommunication technologies; the capacity of the airport and airway infrastructure to accommodate growth.

At the same time that airline travel increased, freight and express services, and general aviation traffic, increased - placing additional demands on the existing airport and airways system.

Moving toward the next century, the nation faces troubling prospects and enormous challenges in all parts of the transportation system. One of the greatest concerns is the air transport system. New capacity will be needed at airports, in the airways, and on surface transportation routes that link airports to cities and other centers of activity. The New York metropolitan region hasn't sufficient land available today to build a new airport (which was the purpose of the search for a "4th Jetport" in the 1960s) nor is there an expandable surface transportation system available.

The New York Region airports - Kennedy, LaGuardia, Newark - as a co-terminal area are the #1 airport in the nation, with 56 million aircraft enplanements forecast for the year 2000. If a site for a new airport could be located, the cost of acquiring and developing the facility in this region would exceed \$20 billion, by some estimates. (The new offshore island airport at Osaka, Japan will cost \$6-7 billion at minimum.)

A minimum of 10 new major hub facilities would be needed in strategic areas of the United States to handle the anticipated traffic, at a cost of \$3 to \$5 billion per facility at minimum. There is little likelihood that many of these airports will be built as new facilities, due to the cost, community disapproval, competing land use, and noise sensitivities.

Despite these staggering costs, and the potential obstacles to development of new facilities, maintaining and enhancing the safety of air travel must be a high priority for federal, state and local officials.

The FAA and the U.S. Department of Transportation are now developing a national strategy for meeting long-term airport capacity needs, within the long-range national transportation policy that is being established.

Commenting on this effort, Secretary of Transportation Skinner noted: "Transportation is about to enter a new era, not yet prepared for the challenges confronting it. To ensure our global competitiveness, successfully provide for the demands of our domestic economy, and maintain our military defense readiness, our transportation system must be renewed with the future in mind. We must determine where we are, decide where we want to go, and then find ways to get there."

2. The Nassau-Suffolk Region

The Long Island regional economy is now self-sufficient in many more ways than it was at the start of the 1980s decade. The health of each sector within the economy - including air transportation and related industries - is important to all of the other sectors. There are fundamental changes taking place that will affect the future economic health and well-being of the region. Maintaining access to the national air transportation system will be even more important in the decades ahead.

With the cuts in defense spending contemplated, the Long Island economy must shift from "swords to plowshares." The Nassau-Suffolk transportation infrastructure is getting older, and must now serve an ever increasing demand upon it from both increased use and incremental population growth - as financial resources to maintain and expand the system are diminishing.

The Long Island Rail Road has just about exhausted its last capital budget and will have to seek billions of dollars in new capital funds to continue improvement and expansion of the system. As these funds are sought within the public sector, ridership is declining due to employment cutbacks in New York City.

The Long Island Expressway needs to be upgraded and expanded, as the population continues to shift eastward to Brookhaven Township.

The region's reliance on air transportation is far greater than many other regional economies; the nation's most important international airport (JFK) is located on physical Long Island and minutes from both Nassau and western Suffolk. An estimated 50,000 Long Islanders are directly employed in air transportation; another 100,000 jobs can be traced to the passenger and freight activities of the region's airline airports.

The nation's busiest air hub or co-terminal (common destination) is "New York" (comprised of Kennedy-Newark-LaGuardia). Added to this co-terminal: traffic at White Plains/Westchester, Islip/MacArthur, Stewart International Airport, each in some way a reliever facility for the larger New York airports as well as an important regional facility serving a distinct, local market (i.e., Islip/MacArthur serving Suffolk).

Air freight access is vital to Long Island companies marketing into a global economy. Transportation in all forms is Long Island's Achilles Heel, and that includes air transportation.

It should be noted here that the New York airports - Kennedy, LaGuardia, Newark, White Plains, MacArthur, Stewart - are atypical in that most of the passengers are often transferring to travel on to another airport, their final destination being another city.

Thus the New York airports as a system generate far more economic benefit for the region - including Long Island - than do many comparable volume airports and/or airport systems in other regions.

3. Calverton/Peconic Airport

The U.S. Navy-owned Calverton Airport, used exclusively by Grumman Aerospace for the final fabrication and delivery

of aircraft as well as for modifications and servicing, is a 7,000 acre facility that is located in a zone that could encompass as many as 15,000 to 18,000 acres of non-residential, preserved, commercial/industrial, parkland, and other compatible-use land surrounding the facility. The waters of the Long Island Sound to the north form an additional buffer zone for Calverton.

See Map 1.

(Kennedy International is slightly less than 5,000 acres; LaGuardia is about 700 acres.)

The primary barriers to establishing new American airports (only two major facilities have been built in the past two decades - Denver and Ft. Myers) have been: lack of a suitable site; conflict with other potential uses for the land; introduction of noise into sensitive areas; landside access; traffic pattern conflicts; congestion in the terminal-area airspace; opposition by incumbent airlines at existing airports. the large investment needed to build a new facility in a developed area.

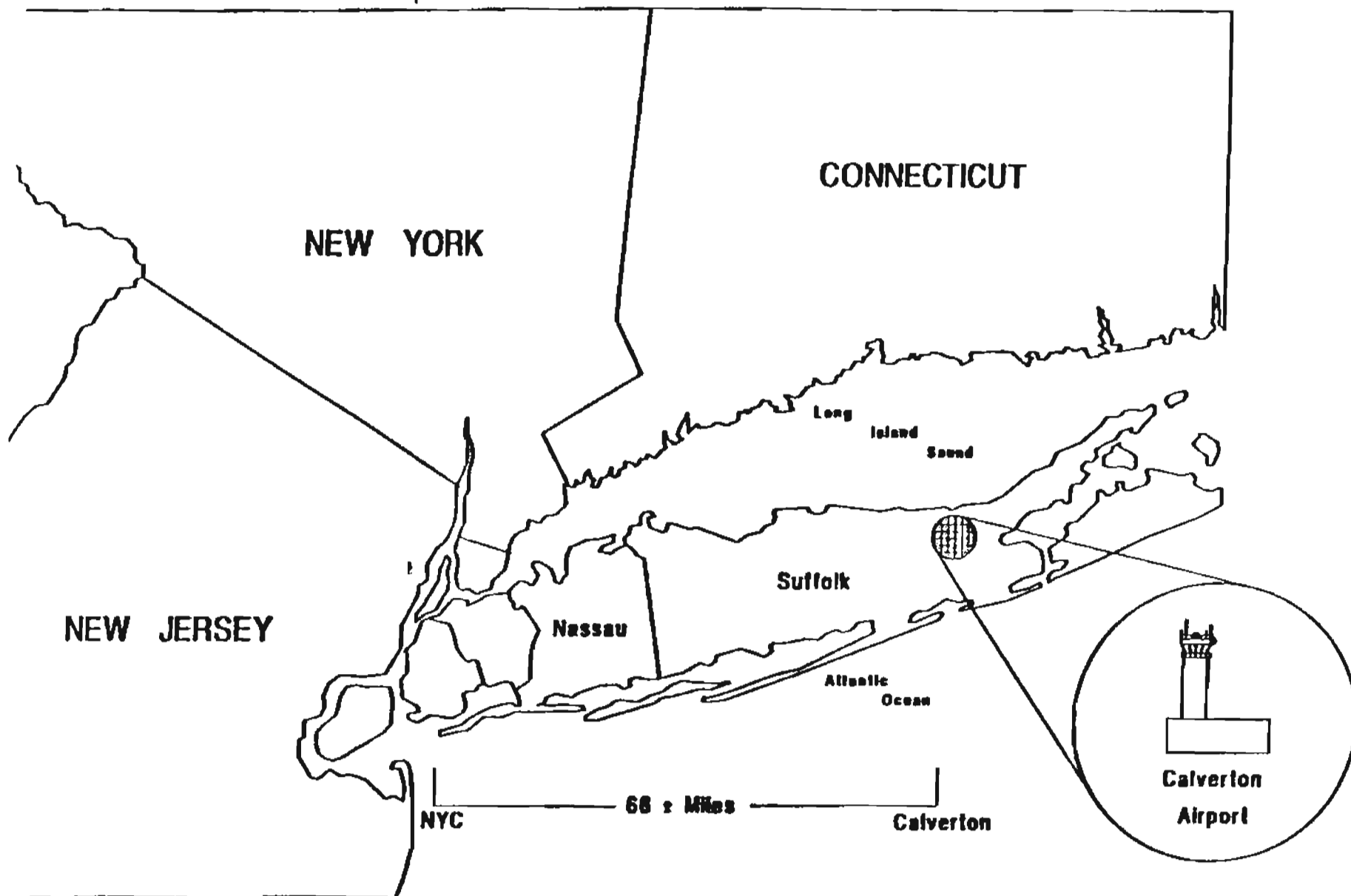
Also, the FAA acknowledges that in the past the failure to achieve community acceptance and support for airports has contributed significantly to the lack of airport capacity today.

Calverton appears to have the potential to offset a number of these obstacles. Proper preparation of the community for a public use airport at Calverton is an essential ingredient for success.

Calverton is located in a region that is lightly populated, with adequate access to an expandable surface transport system that includes road, rail and water, linking the facility to nearby areas that it would serve as a regional airport.

In terms of a new concept in airport development and usage, the emerging "transfer airport" concept should be explored, for this might enable Calverton to be positioned as a new type of airport, one that would serve national as well as regional needs.

The FAA's criteria for definition of such a facility (recently stated) is that the "wayport" or "remote transfer airport" would be located some distance from major metropolitan



Map 1 Location Map
Calverton/Peconic Airport

areas, but near enough to local population areas (using the airport), and would serve as a "node" for long-distance air travel routes. Flights could connect at Calverton and other nodes for passenger transfer; a system of 4 to 10 such "transfer airports" could serve the entire United States.

In some ways Calverton Airport fits the profile for one such facility, and this potential should be fully explored. (The concept could be explored and potential identified, and implemented when the need arises and/or the FAA advances the concept further; this would place Calverton in position to be one of the first 21st Century Wayports, or node airports, with great potential for the Nassau-Suffolk economy.)

The proximity of the Main Line of the Long Island Rail Road to Calverton is important, in that the FAA sees the potential for passenger and freight transfer between the node airport and a major hub airport - such as JFK - as being accomplished by rail, highway, or magnetic levitation (MAGLEV) technology. New aircraft technology - the tilt-wing rotor aircraft - could be utilized for this type of transfer as well.

The MAGLEV transport system was conceived at Brookhaven National Laboratories, adjacent to Calverton. An experimental system of 25 miles or so - Calverton to the LIRR Ronkonkoma terminal and MacArthur Airport - could be operated as a test bed for this advanced technology, in a cooperative program involving the Brookhaven Labs, Suffolk County, the LIRR, Grumman, and other sponsors. Passengers could shuttle between New York City and Calverton, Nassau and Calverton, and Calverton and MacArthur, in this way.

This approach would also work for transfer of freight only, between Calverton Airport and Kennedy International, or between Calverton and New York City/New Jersey.

The Calverton Airport Feasibility Study should focus in part on the transfer airport concept. The facility has the potential to set the pattern for the rest of the nation, as a model for study, and could be one of the first nodes established if the airlines, federal government, local government, passengers, and affected communities agree to the concept as one means of increasing the capacity of the air transport system.

(Calverton advantages: Airlines prefer smaller, more affordable hubs such as American Airlines' facilities at Dallas, San Juan and Raleigh-Durham; TWA's hub at Kansas City; passengers also prefer the conveniences offered by their local airport.)

4. Grumman At Calverton Airport

The role of Grumman Aerospace at Calverton must be carefully considered. The company objected strenuously to the suggested conversion of the field to joint-use or airline use in 1967, when at the request of Governor Nelson Rockefeller the Metropolitan Transportation Commuter Authority studied Calverton as an airport site.

The importance of Calverton to Grumman has been diminished in recent years. The company now operates from several facilities in other states, including airports in Melbourne and Stuart, Florida. The F-14 jet fighter is being phased out of production. The company is striving to protect its U.S. Navy franchise through new aircraft design and production contracts and the re-fitting of F-14 and other existing airplanes.

The U.S. Navy is under pressure from Congress to reduce costs, including site-specific costs. There are debates about eliminating the "Homeport" concept and serious recommendations from the Pentagon to close a number of domestic military bases to save costs. At some point Calverton will be discussed as a facility that costs the federal government money. All of these situations mitigate against a long-term single use (military aircraft) use of Calverton.

In the happy event that Grumman's F-14 is continued in production, or that other advanced technology aircraft are to be produced at Calverton, the potential for Grumman and the federal government to reduce operating costs at Calverton through shared use would help to position Grumman as a lower-cost operator and would offset the disadvantage Long Island now has as a high-cost operations center for manufacturers, and especially for those firms doing business with the Department of Defense on a competitive bid basis.

Maintaining the availability of Calverton to Grumman should be a high-priority for local government. To the extent that a joint-use facility could accomplish this, the con-

cept should be thoroughly explored, and discussed in detail with Grumman and the Department of Defense (as a part of the study). For these reasons alone the Calverton Airport Feasibility Study is worth pursuing.

The viable alternatives to the present single-use facility must be studied with or without the consideration of a commercial airport at Calverton.

The method for preserving Calverton Airport as an airport facility into the 21st Century should be carefully considered by the public sector. The land is simply irreplaceable and represents the largest open space mass on Long Island.

Interest in maintaining Calverton for aviation purposes is long standing. In 1975 The Office of the Chief of Naval Operations commissioned a consultant's study to rigorously examine all known methods of reducing noise impact on the surrounding community at Calverton. In addition to comprehensive recommendations governing flight operations and the modification of flight paths to minimize impact over populated areas, the study also described detailed methods for achieving compatible land use in the potentially impacted area.

5. The Alternatives

What are the alternative uses for the land at Calverton Airport? These appear to be:

1. Continued U.S. Navy ownership/Grumman exclusive use
2. Conversion to Public Use Airport (similar to Republic) (Passenger, Passenger-Freight, Freight-only, etc.)
3. Public Use/Grumman Use Airport (similar to St. Louis)
4. Alternative Use By Government
5. Private Use Of The Site (Development)
6. Long-Term Government Landbanking Of Site

The Grumman F-14 naval fighter is now being phased out of production over the next two fiscal years. This provides a window of opportunity for Suffolk County, the bicounty region, New York State, and the federal government to ex-

plore the potential long-term use of Calverton Airport as a commercial air transport facility.

Within that use would be long-term accommodation for Grumman Aerospace, an attractive alternative since virtually every one of Grumman's competitors operates from such joint-use facilities elsewhere in the country.

The presence of the trained, experienced, qualified aerospace and electronics workforce in Suffolk County could be an attraction for other aerospace manufacturers to locate facilities at Calverton.

And, aerospace capabilities could be applied to other lines of business at a Calverton facility - the construction of aluminum MAGLEV cars for rail use using advanced materials and technologies is one example.

This proposal identifies the specific questions that must be raised and answered in the Calverton Airport Feasibility Study.

Work Task Elements

The purpose of the aviation planning section of the Calverton Airport Feasibility Study is to determine if it is feasible to integrate Calverton Airport into the system of commercial airports serving the New York Metropolitan Region, how the facility would be integrated into the New York and national air transport systems, and the various technical, political, environmental, financial, and market issues that must be addressed if Calverton were to be successfully converted to a public use facility.

The engineering portion would address the physical and site needs of the facility, and the capital budget required for short-term and phased development of the facility.

The study would also address the important community relations aspect of conversion of Calverton Airport, and involve as many Long Island residents, government agencies and institutional and civic interests in the project as possible. Throughout the exercise there will be a continuing communication with civic leaders, government officials,

the airline and transportation industry, consumers in general, and the Long Island business community.

Among the factors that will be studied:

- The amount of air trade demand that will be allocated to the site by various factors;
- the investment required to convert the site to an operating and functional public airport;
- the investment required for regional infrastructure development to support the airport;
- the environmental consequences of proceeding with the joint use of the airport;
- the beneficial economic impacts for the regional, state and national economies;
- the method of managing and administering the facility as a public-use airport.

Task 1: Data Collection And Inventory

A. Calverton Airport - Facility Review

1. Airside Facilities
2. Landside Facilities
3. Utilities
4. Ground Transportation/Roads
5. Air Traffic Control Services
6. Airspace Environment
7. Potential Joint Use/Grumman

B. Regional Access System

1. Highways/Arterial Roadways
2. Long Island Railroad
 - a. Potential For Connection to New York City
 - b. Potential For Increased Freight Traffic
3. New Land Systems
4. Water/LI Sound Access

- a. Potential For High-Speed Ferry Crossing Services To New England Region

C. Land Uses-Existing Zoning

1. Airport Environment
2. Laws and Regulations
3. Permitting Process/SEQRA Review Process
4. Special Environmental Protection Considerations (Pine Barrens Zone, 208 Water Study Zone, etc.)
 - a. Examination of Calverton Airport Effect On L.I. Specific Programs
 - b. Potential Acquisition Of Buffer Land (to remediate and/or mitigate environmental impact, noise, traffic, etc.)
 - c. Potential Remediation Through Technology (Both (b) and (c) are potential candidates for funding under FAA Airport Improvement Program)

D. Comprehensive Plans Within the Region

1. Demographics - Long Term Forecasts
2. Socio-Economic Variables
3. Transportation Plans
4. Land Use and Zoning - Projected/Regional
5. Specific Land Uses Proximity to Airport

E. Disposition of Calverton Airport Site

1. Joint Use Opportunities
2. Continued Grumman Aerospace Operations, Department of Defense Ownership

F. Political Environment

1. County Administration/Suffolk
2. Suffolk County Legislature
3. Townships - Brookhaven, Riverhead, Southampton
4. Local Governments/Communities/Civics
5. Long Island Business Community

6. New York State (D.O.T., D.E.C., others)

7. Federal Government

8. Privatization Potential

G. Meteorological Characteristics

1. VFR and IFR Weather

2. Wind Direction & Velocities

3. Special Long Island Climatic Conditions

H. Engineering Considerations

1. Geotechnical/Topography

2. Water Table/Water Supply

3. Storm Water Disposal & Drainage

4. Construction Standards

5. Building Codes

6. Preliminary Specifications For Proposed New Facilities

Task 2: Air Trade Demand Forecasts

A. National Requirements For Air Transportation

1. Air Transport and the U.S. Economy

2. World Trends

3. North Atlantic Trends

4. United States Trends

5. Regional Trends - Especially Long Island

6. Alternative Strategies To Deal With Growth In Demand

- a. Extension of FAA Programs

- b. Build More Airports

- c. Let The Market Decide/Reduced Government Response Ahead Of Demand

- d. Reconfigure The U.S. Airport System (including transfer-only airports to replace major metro area

airports as connecting hubs, a potential use for Calverton Airport)

- e. Revolutionize Inter-City Transportation (new aircraft, technology, ground-air links, MAGLEV, another potential Calverton Airport role)

B. Control Totals for the Region

1. Domestic Passenger Enplanements

- a. Short-to-Intermediate Range Travel

- b. Long-Range Travel

- c. Business Travel Trends

- d. Personal/Pleasure/Family Travel Trends

2. International Passenger Enplanements

- a. North Atlantic Trends

- b. Pacific Rim Trends

- c. Hemispheric Trends

3. Commercial Aircraft Operations

4. Cargo (Freight & Express) Enplanements & Deplanements

- a. Domestic

- b. International

5. Air Mail/Enplanements

C. Market Share Distribution Of Control Totals

1. JFK International Airport

2. LaGuardia Airport

3. Newark Airport

4. Islip/MacArthur Airport

5. Stewart International Airport

6. White Plains/Westchester County Airport

7. Calverton Airport

8. McGuire AFB/Southern NJ (now military-only)

D. Market Share Scenarios

1. Existing Passenger Travel Patterns To Airports

- a. The Long Island Market*
- b. New York City Market*
- c. New York Region, including Southern Connecticut*

2. Use - Closest Airport To Local Passenger Origins

- a. Nassau-Suffolk Patterns*
- b. Regional Patterns*
- 3. With Calverton Operating, The Change In Roles Of Airports Now In The System*
- 4. Determine Sensitivity Of Airport Ground Travel Time*

E. Forecast Air Traffic At Calverton Determine Range of Demand That Would Be Attracted To Calverton Airport

- 1. Passenger Movements*
- 2. Cargo (Freight, Mail, Express) Movements*
- 3. Aircraft Operations*
- 4. Air Carriers*

Task 3:-The Facility And Its Requirements

A.Location/General Information

- 1. Location of Facility/Features*
- 2. History*
- 3. Access/Transportation Network*
- 4. Environmental Aspects - Including Special Considerations (Pine Barrens Zone, the Protection of Peconic River Basin, Aquifer Protection, Farmland Preservation Programs, etc.)*
- 5. Exploration Of Joint-Use With Grumman, Short/Long Term*
- 6. Potential Use For Other Aerospace Companies*
- 7. Potential use For New Technologies (aviation and non-aviation)*

B. Airside (For Each Demand Range)

1. Runways

2. Taxiways

3. Aprons

4. Navigation Aids (Nav aids), Lighting

5. Radar Equipment

C. Landside

1. Passenger Terminal Buildings

2. Cargo Terminal Buildings

3. Support Buildings

4. Hotels

5. Aircraft Maintenance & Servicing

6. Aviation Fuel Facilities

7. Catering Area

8. Sanitary/Sewers

9. Water Supply

10.Power Supply

11.Telephone/Communications

12.Solid Waste Disposal

13.Fire Protection

14.Gruman (Joint Use) Needs

15.Other Aerospace Company Needs (potential use by other manufacturers, designers, service organizations)

D. Access and Parking

1. Internal Airport Roads

2. Connections to Regional Systems

3. Rail Access

4. Short and Long Term Parking

5. Rental Cars

6. Employee Parking

Task 4 :Intermodal Transportation Potential

1. Road Access and Requirements

2. Rail Access and Requirements

3. Water Access and Requirements

Task 5:- Airport Development Plan

A. Phased Development

1. Preparation of Airport Layout Plan

2. Preparation of Terminal Layout Plan

3. Preparation of Transportation Network Plan

4. Land Use and Noise Control

5. Joint Use With Grumman

6. General Aviation/Commercial Aviation Mix

7. Community Involvement And Preparation

8. Pre-Marketing Program/U.S., Regional, International

B. Capital Costs

1. Capital Raising

2. Development Construction Schedule

3. Costs for First Stage/Conversion

4. Costs for Second Stage Development

5. Long Term Capital Needs

C. Sponsor Identification

1. Airport Administration and Operations

2. Financial Considerations

D. Airline Technical Committee Input

*E. Communication With the Public, Public Meetings,
Community Involvement in the Process*

1. Communications Program/Manage and Conduct

2. Media Relations/Liaison

3. Public Hearings (Support Services, Coordination)

4. Reports to the Public and Business Community

5. Reports to Government

6. Government Liaison

Task 6: Environmental Considerations

A. Environmental Assessments

1. Generic Environmental Impact Statement (SEQRA)

2. Individual Assessments, Specific Situations

3. Federal Acts (Clear Air, Clean Water, CERCLA, etc.)

4. AICUZ Study

Task 7: Economic Assessments And Benefits

1. Cost Estimates

2. Airport Revenues

3. Airport Operations and Maintenance Costs

4. Capital Costs

5. Financing Development of Facilities

6. Potential For Obtaining Grants/Sources

7. Direct Employment/Benefits

8. Indirect Benefits, Nassau-Suffolk Regional Economy

9. Direct/Indirect Benefits, New York State Economy

10. Tax Impacts - New Revenues for Government

- a. Local Government, Including Schools

- b. County of Suffolk

- c. State of New York

- d. U.S. Government

11. Federal Government Import/Export Fees

ASSURANCES - Non-construction Programs

I, Lee E. Koppelman, Executive Director of the Long Island Regional Planning Board and its duly authorized representative attest that the Long Island Regional Planning Board does hereby certify to abide by the applicable requirements as set forth in OMB Approval No. 0345-004 relative to this funding application for the planning feasibility of utilizing the U.S. Navy/Grumman Airport facility at Calverton, New York for joint use.

In regard to the first assurance relative to the legal authority to apply for Federal assistance, I have appended the respective citations from State Law and the actions of the County Legislative bodies and County Executives of Nassau and Suffolk Counties in the creation of the Long Island Regional Planning Board, including its ability to secure grants, contracts, and so forth.

Local Share

Contact has been made with the New York State Department of Transportation, who have assured me of their interest and willingness to participate to the extent of a seven and one-half percent (7-1/2%) State contribution to be matched by a two and one-half percent (2-1/2%) contribution from the Long Island Regional Planning Board. The Long Island Regional Planning Board has earmarked support from its current operational budget and is prepared to furnish the entire ten percent (10%) cost in the event current budgetary strictures at the State level mitigate against State participation.

Lee E. Koppelman
Executive Director

OMB Approval No. 0345-0040

ASSURANCES - Non-construction Programs

Note: Certain of these assurances may not be applicable to your project or program. If you have questions, please contact the awarding agency. Further, certain Federal awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant I certify that the applicant:

1. Has the legal authority to apply for Federal assistance, and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project costs) to ensure proper planning, management and completion of the project described in this application.
2. Will give the awarding agency, the Comptroller General of the United States, and if appropriate, the State, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to the award; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.
3. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.
4. Will initiate and complete the work within the applicable time frame.

ASSURANCES

Displaced Persons Statement

The entire project is within an existing and operating U.S. Navy/Grumman airport facility. No additional land acquisition is or will be required, and no displacement or relocation of individuals is or will be required.

Runway Safety and Runway Protection Zone

The airport was originally designed to maximize runway safety and to protect the airport operations from incompatible surrounding land uses. The U.S. Navy purchased several thousand acres of "aviation" development rights to achieve this objective. Over the past three decades the County of Suffolk has conducted a major open space acquisition program with heavy emphasis on the air corridor between Calverton and the Suffolk County Airport at Westhampton. Virtually all the land in the corridor is now in the public domain and constitutes the maximum separation and protection of residential communities and the maximum protection of the runway zone for the airport to be found anywhere in the New York Metropolitan region.

Specific Opposition Statement

Since the airport already exists and is well buffered from all other land uses, there is no current opposition. The Long Island Regional Planning Board, however, anticipates that opposition will be raised by some individuals and groups in the name of environmental concern, or opposition from non-growth advocates who oppose virtually every proposal from highway improvements, industrial and/or commercial development, and even new residential communities. To fully comply with the spirit and letter of this requirement the Long Island Regional Planning Board will establish a broad-based Citizens Advisory Council (CAC) to work with the Board and its consultants throughout the study. Membership will not be selected by the Board, but will be based on volunteer membership from environmental, business, civic and governmental entities.

All studies conducted by the Long Island Regional Planning Board are based on the strongest citizen participation possi-

ble and call for adequate public meetings and hearings to provide public input into the planning process. In preparation of this grant application, a number of public presentations have already been made by speakers from the Long Island Regional Planning Board, as well as from the FAA.

BUDGET

Consultants:

2 Principals @ \$500/day for 113 days	\$ 56,500
1 Associate @ \$350/day for 25 days	8,750
2 Senior Researches @ \$280/day for 50 days	28,000
1 Computer Analyst @ \$220/day for 25 days	5,500
2 Clerical @ \$175/day for 35 days	6,250
	\$105,000

Long Island Regional Planning Board:

1 Project Director and Deputy Director @ \$400/day for 200 days	\$80,000
1 Administrative Asst. @ \$200/day for 87 days	17,400
1 Stenographer @ \$175/day for 70 days	12,250
2 Cartographers @ \$250/day for 145 days	36,250
2 Chief Planners @ \$275/day for 70 days	38,500
2 Senior Planners @ \$225/day for 70 days	31,500
2 Research Associates @ \$250/day for 105 days	26,250
1 Demographer @ \$200/day for 80 days	16,000
5 Research Analysts @ \$500/day for 205 days	102,500
	\$360,650

Supplies:

Printing of Reports	\$ 17,000
Supplies	2,200
Public Meetings	750
Travel	400
	\$ 20,350

GRAND TOTAL \$ 486,000

Federal Share	437,400
State/Local Share	48,600
	\$ 486,000

APPENDIX D

A Draft Discussion Paper Calverton Airport Redevelopment

Prepared for the
North Fork Environmental Council

Prepared By
Gillham & Gander Associates, Inc
107 South Street
Boston, Massachusetts 02111

The following paper has been prepared for the North Fork Environmental Council at their request. The paper has been prepared by Oliver Gillham of Gillham & Gander Associates, Inc. working on a pro bono basis. The paper is intended to address at a very preliminary level some of the issues which may be associated with current proposals to redevelop Calverton Airport for commercial use.

Calverton Airport Redevelopment

A Discussion Paper

Introduction

The purpose of this paper is to present a preliminary outline of the potential issues which may be associated with current proposals for developing Calverton airport for commercial aviation use. To this end, the paper is organized in two parts: 1) the nature of the current proposal, and 2) possible environmental concerns associated with the proposal.

The Current Proposal

The exact nature of what is being proposed for Calverton is not entirely clear at present. The April, 1991 grant application to the FAA for the Calverton Airport Feasibility Study and recent newspaper articles covering the subject appear to offer different versions of what is being planned. Most of the recent newspaper articles quote various proponents as suggesting primarily cargo use of the airport, possibly together with regional airport type passenger use (similar to MacArthur Airport in Islip) and, perhaps, aircraft maintenance.

On the other hand, the grant application made to the FAA seems to concentrate on conversion of the airport to serve as a major international air passenger transfer facility. The implications of these two proposals are quite different. The first proposal suggests a moderate use facility with potentially low levels of aircraft operations. The second proposal suggests a major international passenger and cargo facility like John F. Kennedy International Airport (also on Long Island) with a very high level of aircraft operations.

One possibility suggested in a recent Newsday article by Paul Townsend (editor of the Long Island Business News) is short term use of Calverton as a cargo port with long term development of the field as an international passenger transfer facility. In this view the different scenarios become stages in a phased development plan. Such a strategy probably makes the most sense from an incremental development point of view. The level of investment could initially be relatively small and the market for the full development facility could be built up over a number of years, adding major carrier routes one at a time if the market proves feasible.

This is also a potentially advantageous strategy from the public relations and environmental permitting point of view. Instead of embarking upon a public environmental permitting process for a major international passenger facility right from the outset (which might easily fail) the initial process

might be required to address only a cargo port proposal. Passenger routes and capital improvements could then be added incrementally with individual environmental reviews. Under such a scenario, the subject of the accumulated impacts of a major international passenger facility might never be fully addressed.

Because this may be an implicit strategy (intentionally or unintentionally), locally involved citizens should demand that the full build potential of the airport be discussed from the outset. Or that strong, legally binding covenants be put in place that would require a full and open environmental review of the potential ultimate facility prior to allowing any future use of Calverton as a major passenger airport.

The paragraphs below discuss several of the various scenarios mentioned in the press and in the FAA grant application.

Cargo Port/Regional Airport

A key point to consider in this concept is that a very large percentage of air freight is carried by passenger aircraft either as belly-hold cargo or in combination aircraft. For example, at Logan International Airport in Boston (the 10th busiest airport in the U.S. with almost 23 million annual passengers in 1990), over 55% of the cargo tonnage is carried by passenger aircraft. Of the remainder only about 17% is carried by all-freight carriers. The rest is divided between the various package express type services (such as Federal Express, United Parcel Service, etc.). Because major passenger service does not appear to be envisioned in the cargo port scenario, it is only the all-freight carriers and package express type services that would be likely to be included in this concept. Several newspaper articles have made mention of just-in-time assembly and manufacturing plants that might be related to the proposed cargo port use of the airport, but this idea seems somewhat conjectural at this point and would likely be dependent on the types of manufacturing one could attract.

A more likely scenario is that aggressive marketing might be able to attract one or two all-cargo carriers at the outset, and/or possibly some package express type activity. A difficulty in this plan is Calverton's location in the region to-

gether with existing competition from facilities like Kennedy. Calverton's site at the eastern end of Long Island places it in an 'off-of-center' position relative to the rest of the region it is intended to serve. Kennedy and Newark, on the other hand, are much more centrally located. It may be difficult to persuade carriers to switch. This could be particularly true of package express services which may need to be more centrally located in order to meet their scheduled delivery times to the region. On the other hand, as Kennedy and Newark reach ever higher utilization levels, low operations levels and possibly less expensive facilities at Calverton may prove appealing to some freight carriers.

However, ground access may be a major hurdle. Although rail service is proposed to handle some of the freight traffic, the bulk of the freight is more likely to move by truck due to potential for dispersed origins and destinations of goods in the region. This is certainly likely to be the case with mail and package express services. This means that the trucks may have to travel on already congested roadway facilities to get through New York City to the rest of the region. Increasingly, origins and destinations for freight traffic are likely to follow urbanization patterns in the region which have been trending toward increased diffusion throughout the tri-state area. Plans mentioned to build new roadway crossings over Long Island Sound might help to solve the regional access situation, but these are massive undertakings in themselves and may not ultimately be environmentally or financially feasible in today's climate. One of the last major roadway projects considered in the New York area was Westway.

It should also be noted that major bridge and tunnel projects can also take many years to plan and build. Planning work which led to Boston's Central Artery/Tunnel project started in the 1970's and was based on even earlier regional highway concepts. The project is now under design with portions just starting construction. Final completion is expected at the end of this decade. Thus almost 30 years will have elapsed between the planning stage and delivery of the project.

High speed ferry service has also been mentioned, but this type of service seems best suited for passenger use and is likely to be limited in capacity relative to the volume of vehicular traffic that can be moved by road.

Given these obstacles, freight traffic may be possible at Calverton, but it may take an aggressive marketing campaign and competitive pricing to make it work. The feasibility study should be asked to include a thorough review of the probable market and likely regional origins and destinations of air freight and package express throughout the market area which might be served by a cargo port at Calverton. The study should also offer a careful assessment of competition from existing as well as other proposed air cargo ports in the region.

The FAA has recently given attention to the potential for joint use of McGuire Air Force Base in New Jersey for commercial air passenger and cargo traffic. It is possible that such a facility might offer better access to portions of the region than Calverton and its potential effect on the market should be carefully studied in the feasibility report.

If freight carriers can be attracted to Calverton, it should also be borne in mind that many of these carriers tend to use older and hence noisier planes which often operate at night. Thus the noise impacts from such a use may not be inconsiderable. A full assessment of the likely impacts should be included in the feasibility report.

Maintenance Facility

Building a major aircraft maintenance center at Calverton might be an attractive possibility. Such a use would probably not be likely to generate high operations levels and might involve relatively little ground traffic. Also the use could be quite attractive from the employment perspective. However, the marketing issue is also important here. In order to make it work a major airline would probably have to be attracted to the site. The proximity of Kennedy and Calverton's location on the Atlantic rim could potentially be attractive to some carriers, although some maintenance work already takes place at Kennedy. On the other hand, location criteria can differ depending on the carrier.

The criteria can be economic or may have to do with where the carrier's major operations are centered.

In terms of employment, the facility study should address whether other existing maintenance centers in the region would be replaced by new centers at Calverton, thus affecting employment elsewhere in the region, such as in Queens.

If the Calverton site is considered for maintenance use, the impacts to the underlying aquifer should be carefully considered in this case for what will essentially be an industrial use which may involve such activities as painting of aircraft.

General Aviation/Regional Airport

As a regional carrier in the mold of MacArthur Airport in Islip, Calverton might also be successful. Major issues could include competition with existing service at MacArthur and with East Hampton Airport as well as other local General Aviation (GA) facilities. Calverton could also serve as a high-quality GA facility for private aircraft, including recreational aircraft, business jets and possibly flight schools. Such a scenario could generate fairly significant operations levels, particularly in the summer, and noise, particularly from helicopters and business jets could become an issue, especially if combined with cargo activities. Calverton Airport is currently surrounded by relatively large tracts of undeveloped land which could help to limit potential noise impacts if land controls were put in place to contain future development.

International Passenger Transfer Airport

This scenario clearly has the most far-reaching implications for the eastern end of Long Island, especially in terms of long term land use. Essentially this concept involves developing an airport geared primarily toward the transfer of passengers from international flights to an array of domestic flights headed for different U.S. cities. It is basically similar to the hub and spoke systems that occur at Atlanta, Dallas/Fort Worth and O'Hare in Chicago, only in this case it would be tailored specifically toward international passengers and carriers. This concept seems to be closely associated with the 'wayports' idea advanced in the 1980's

which identified the possible need for up to ten major new transfer facilities in the U.S. However, there may be some question as to whether this need still exists. The wayports concept was largely a product of the 1980's when, following deregulation, the number of airlines expanded dramatically and the airlines developed new hub and spoke networks throughout the country to respond to the new business environment.

In the 1990's the industry picture has changed considerably. A number of major carriers have been consolidated while others have gone out of business altogether. It is quite possible that these industry changes have reduced the need for new hub facilities, perhaps calling into question the need for large new hub airports in the near future. Recent articles in the Wall Street Journal and elsewhere have seriously questioned the need for many of the airport construction projects now in progress as well as those still in the planning stage or about to enter the planning stage.

This concern is all the more critical in the New York region since New York already has international transfer airports at Kennedy and to a lesser extent at Newark. At Kennedy, close to one third of the passengers are changing planes. In fact, a major international airport at Calverton could be in direct competition with facilities at Kennedy (which are more central to the region) and it may be difficult to convince major carriers to relocate.

Furthermore, if the transfer carriers to be located at Calverton do not relocate from Newark or Kennedy, then where will the new services come from? If the transfer market is primarily what is being sought, then perhaps it may be possible to attract some of the share from other Northeast airports such as Boston/Logan where Northwest Airlines presently does some international/domestic transfer activity. However carriers serving Boston, Philadelphia or Washington are also serving origin/destination traffic to these cities and may not be interested in relocating. The feasibility study should provide a careful analysis of these types of issues.

Contrary to a 'field of dreams' types of hypothesis, experience has shown that simply building a new airport does not

always attract the hoped for levels of activity. Examples of such behavior include Mirabel in Montreal, a major carrier airport which was built at great expense only to meet very little demand. Closer to home, Dulles International Airport in Washington, D.C. has taken many more years to develop market share than anyone ever anticipated when it was originally built.

Professor Richard DeNeufville, a world renown authority on airport systems planning and Chairman of the Technology and Policy Program at the Massachusetts Institute of Technology has written extensively on the subject of adding airport capacity to metropolitan regions. In his 1984 paper entitled Planning Multiple Airports in a Metropolitan Region, Dr. DeNeufville states:

It is one thing to conclude that a second airport is a logical means to provide additional capacity, quite another to know what role this facility will perform in a multi-airport system. Indeed, we cannot simply create additional airport capacity anywhere in the metropolitan area and expect that it will be used.....Errors in the development of multi-airport systems abound. Montreal/Mirabel is a classic example of an airport built inappropriately. Washington/Dulles is another. In both cases large airports were built about 20 miles from the city center, when the major airport was within 5 miles. In both cases the stated objective was to develop the dominant, international airport for the region. And in both cases the vision was not realized. Montreal/Mirabel, the large new airport, is inactive compared to the downtown airport of Montreal/Dorval. Likewise, Washington/Dulles ranks a poor third in traffic behind Washington/National and Baltimore-Washington. As of 1981 it served only about 11% of the Washington air traffic. Remarkably it even lost traffic (-16%) and market share (14% to 11%) from 1973 to 1981, despite the overall increase in traffic in the region.

There is no assurance that future increases in air traffic will necessarily justify the investment. The evidence is otherwise.

Since Calverton is said to be almost 70 miles from Manhattan and is even further from other portions of the market region, the problems associated with developing market

share may be even more severe than at Mirabel or Dulles. Of course international airlines could be forced to relocate if international customs and immigration facilities were only available at Calverton, but doing this would mean shutting down Kennedy and Newark to international traffic and essentially relocating these regional functions to Calverton, with all the consequent impacts that such a move would generate.

It could be argued that growth in passenger and cargo traffic alone will eventually create the need for a fourth regional jetport in the New York area regardless of whether it is an international hub or combines international and domestic travel in both transfer and O/D modes. The key questions here are when and under what conditions might such a facility be needed, what is the best location for such a facility and how will it work with the rest of the regional airport system?

None of these questions can be easily answered and should properly be the subject of a different study than the one which is being proposed for Calverton. A fourth major airport study should examine the regional airport system as a whole, its total capacity, markets served, and future forecasts of regional passenger and cargo activity. The study should also concentrate on identification and evaluation of all the potential sites for a fourth major jetport which might exist in the region - only one of which might be Calverton. Site evaluations should include an assessment of relative market share, access, aeronautical factors, construction cost, economic impacts, environmental impacts (including land use) and other factors.

Such a study should also focus on timing. The need for a fourth major jetport could exist within next 10 years, or could be 20 or even 30 or more years away. Although forecasts of activity will be needed to make such assessments, the track record of forecasts is very dim due to the large number of variables and assumptions involved. As Dr. DeNeufville wrote in his recent paper *Understanding and Using Forecasts*:

Forecasts are necessary for planning, for decision making, and for any review and understanding of the prospective

choices. Planning, as a profession, focuses specifically on trying to deal constructively with possible futures. Decision-makers need a clear perspective on the likely consequences of their options. Discussions of alternative plans likewise routinely resolve into debates about whether the most appropriate forecasts were considered.

Unfortunately, however, forecasts are inevitably inexact and debatable. A prediction is not a fact that can be unambiguously measured. The number of passengers ten years hence at any airport is not something anyone can know in advance, or can calculate in the same way we can compute the speed of a car or weigh its load on a bridge. All forecasts are estimates, based on expectations about other factors, derived from some assumptions.

Any forecast of future traffic is based on a house of cards. It can be criticized by using different assumptions, and coming up with a different forecast. And that new forecast in turn is equally vulnerable to criticism. No forecast can be proven to be right in advance. This is the reality that good planners recognize.

Changes in the carrier industry, including the number of carriers, their fleets and their route structure are among the factors which can affect a given forecast, as are economic cycles and changes in technology. Such changes can also affect the traffic picture and capacity assumptions about existing airports. For example, changes in the number of carriers, the fleet mix (types and size of aircraft), load factors (the number of passengers the airplanes carry), peak spreading (the spreading out of peak hour activities over a longer period) and air traffic control technology (which can affect the number of planes which can land in an hour in various weather conditions) can all act to greatly change assumptions about the capacity of an existing airport. If these factors are assumed to move in a particular direction they can act to greatly increase the assumed capacity of a given airport. Reducing or eliminating general aviation operations (small private aircraft sharing the runways with large commercial jets) can increase passenger and cargo throughput capacity still further.

New carrier services at other existing airports near to the metropolitan region could also act to reduce demand at New York over time. The introduction of a major international carrier at Bradley International Airport in Hartford has been discussed for a number of years. If this were to occur, it could act to reduce demand from the Connecticut and Upstate New York portions of the regional international air travel market. Additional international service at Philadelphia might have a similar effect on portions of the New Jersey market.

The combined effect of increased service at other Northeast airports plus changes in peak use, aircraft fleet mix, load factors, air traffic control, and airfield use could all act together to create substantial increases in the passenger and cargo throughput of the three existing major airports in the region for many years to come without requiring new runways or airfield space.

For example, Boston's Logan Airport, which is generally considered to be approaching (or to have reached) airfield capacity conditions is currently handling about 23 million annual passengers. It is projected that measures similar to some of those mentioned above could allow Logan to handle up to 45 million passengers per year under the right conditions. This would represent a significant increase in passenger traffic without adding any new runways.

Even with such measures, it may still be likely over time that increased travel demand in the region combined with constraints at existing airports will require that new airport capacity be added to the New York metropolitan region at some point in the future. This potential need should best be addressed in a study of the regional airport system as discussed above. The regional system study should take also into account the potential effect of planned new high speed rail and other initiatives on the regional airport system. Following such a study, if need can be determined, a siting study should be conducted which reviews the type of airport needed and identifies and evaluates all the potential sites in the tri-state area which might serve such a purpose. The study should include such sites as McGuire Air Force Base in New Jersey which is currently under investiga-

tion as a candidate for potential air passenger and cargo use. Because long term forecasts of future air travel activity are largely debatable, the siting study might best be undertaken with an eye toward land-banking a site somewhere in the region for this future potential need.

A study to determine the need for a fourth major airport in the New York area and a siting study should including an investigation of the considerations mentioned above should properly be conducted before any decision is made to create a major jetport at Calverton. After all, it may turn out that Calverton is not the best location for such a facility when compared with other possibilities.

If it were to be determined that additional regional airport capacity are needed at some point in the future and, if Kennedy and/or Newark are not be replaced by some new airport, the market question remains. Calverton is not centrally located to its regional market and therefore may be very difficult for much of the region to use. If all the passengers were simply transferring to other planes this might not be an issue. However, not all of the passengers are likely to simply be transferring. It may well turn out that to function properly in the regional system, a fourth major jetport will have to include a substantial portion of origin/destination (O/D) traffic.

There are also important industry considerations as well. Airlines generally choose hub locations where there is also a reasonable share of O/D traffic in order to make their business work. Even at Atlanta where 70% of the passengers were changing planes in the 1980's, the remaining 30% of the traffic was O/D. At other major hubs the percentage of transfer traffic is often less than 50% of the total. Thus, even under the wayport concept, it is likely that some percentage of the passenger traffic at Calverton would probably have to be O/D and would require convenient access to the regional passenger market or the airlines may not be attracted to the facility.

Although a rail link to New York City has been discussed, it should be borne in mind that the largest mode share of ground transportation is likely to be vehicular in nature and most likely by low-occupancy vehicles. Again, this is likely to

be the case because of the increasingly dispersed origins and destinations within the region. At Kennedy Airport (which is closer to New York City) 67% of all passengers used private auto, taxi or rental car in 1987 to access the airport. 33% used bus or limo. At Boston/Logan, about 7-8% of airport passengers use the mass transit rail link to the airport. In Philadelphia, where there is a commuter rail line connecting directly to the airport terminals and providing connections to the entire Philadelphia commuter rail system, less than 1% of the O/D passengers used the rail line in fiscal year 1991. In Europe (where there are arguably the best rail connections to airports in the world) about 15% of the people accessing Frankfurt Airport on a typical peak day used public transport according to a 1986 press kit published by Flughafen Frankfurt. Public transport at Frankfurt includes not only rail lines connecting directly to the terminal and linking the airport with commuter rail and the national railway system but also extensive bus service as well. Thus the actual rail share is probably some smaller percentage of the total public transport share.

Furthermore, airport employees are very likely to use private auto as the major access mode to a major airport at Calverton due to shift change requirements and other factors. For example at Logan Airport in Boston an estimated 9,600 employees commuted to the airport in 1990 and 85% of the employees used private auto to get to work.

Private autos, taxis, rental cars, bus and limo are likely to handle the majority of passengers not transferring at Calverton. If the goal is to reduce the number of passengers in low-occupancy vehicles then the most likely answer will probably be to increase the percentage of passengers using bus and limo. This is likely because bus and limo are the modes which are most readily able to address the dispersed origins problem by utilizing route planning and/or remote parking lots and terminals.

All of these airport users will have to travel on what is already a highly congested roadway network, and for many users the trip to Calverton may mean traveling through or around New York City to get there.

Additionally, to work well as a major hub facility, the existing runway configuration will probably not be adequate. Ideally, a major facility of this type should have fully independent dual parallel runways with cross wind capability available as well. The current 'Open V' configuration does not meet this requirement. To have two independent runways requires a separation of the two parallel runways by at least 4,300 feet. This can probably be achieved at Calverton but it may involve utilizing the cemetery lands as well as some of the adjoining parkland which may entail Section 4(f) impacts.

In order to properly address the feasibility question, the current study should be asked to present a very careful and thorough assessment of the need for a major international passenger facility if that is what is being planned. The study should include a complete analysis of the market for such a facility and how it will work together with the other three major airports in the region. The study should be asked to very thoroughly address ground transportation and regional location issues as well as airfield operations and runway configuration. Additionally, the study should ideally be treated as but one component of a wider regional airport siting analysis.

Finally, an international transfer jetport can have very significant environmental impacts, a few of which are summarized below.

Environmental Considerations

This section concentrates on outlining what some of the principal environmental considerations surrounding the development of a major jetport at the Calverton site might be.

Noise

Noise is usually first on the list of environmental impacts that people think about when a new jetport is being considered, although the noise issue may in fact be less of a concern at some sites when compared with other considerations such as long term changes to regional land

use patterns. Noise impacts are frequently described in terms of total cumulative noise exposure to individuals. This is generally expressed as the yearly day-night average sound level or "YDNL" (also expressed as Ldn). The Ldn value is a single number descriptor of the time varying noise energy occurring over a 24-hour period, with a weighting factor for the human sensitivity to noise during the nighttime period. (10:00 PM to 7:00 AM).

Ldn was developed and introduced as a single method for predicting the effects on a population of the average long-term exposure to noise. After many years of study and application, the Ldn is generally considered a workable and efficient tool for use in airport and land use planning and in relating aircraft noise to community reaction. This descriptor is used in airport environmental assessments and is the specified descriptor in Title 14 of the Code of Federal Regulations, Part 150 (14 CFR Part 150), which governs the FAA's noise and land use compatibility planning process. Criticisms of this descriptor have included questions about how well it accounts for single event noise produced by unique and/or particularly noisy operations such as helicopter flights.

Land use compatibility guidance is provided by the FAA which relates the noise levels expressed by the contours to various land use types experiencing that noise. The 65 Ldn contour remains the contour threshold significance. Table 1 is a reprint from 14 CFR Part 150 which compares land uses and noise levels.

In order to make some very rough preliminary comparisons, Figures 1 and 2 show hypothetical noise contours for a 30 million annual passenger jetport superimposed on a 1984 USGS map of the Calverton site assuming two possible runway configurations. These templates are based on those used in the site screening phase of the recent Second Major Airport Siting Study in Massachusetts. They are based on hypothetical projections of annual operations and fleet mix variables for a projected major international and domestic airport. For comparison purposes, Kennedy Airport processed just over 30 million annual passengers in 1987. The runway configurations shown are also totally hypothetical,

but the configurations do show fully independent dual parallel runways. Obviously, more study would be required to determine the actual preferred runway orientation based on a study of the local wind rose and other aeronautical and meteorological factors. However this exercise helps to give a very preliminary rough idea of areas which might be affected by noise from a major jetport in this location. The feasibility study should be asked to address this issue in more detail.

As can be seen, Calverton's buffered location surrounded by large tracts of undeveloped land tends to limit the effect of noise. There appear to be relatively few areas of densely developed residential or other highly noise sensitive land uses within the contours. From the noise point of view Calverton might score relatively well as an airport site. Additionally the contours shown here reflect contemporary fleet mix conditions with a certain percentage of Stage 2 (noisier) aircraft. New regulations call for complete conversion of all commercial aircraft to Stage 3 or better in the early part of the next century, although it is widely thought that the industry may seek to delay implementation of the new rules as the date approaches. Conversion to Stage 3 will dramatically reduce potential noise contours as shown in Figure 3 which depicts how an all Stage 3 fleet mix might reduce the area covered by the 65 Ldn contour for the hypothetical runway configuration shown in Figure 2.

Nonetheless, under prevailing fleet conditions it is possible that portions of such residential areas as Wading River may be heavily affected by noise, depending on final runway configuration. The same may be true of the Brookhaven National Laboratory.

Current FAA regulations list park land as a noise compatible use but make no mention of how wildlife preserve areas should be treated.

Traffic

In the full development scenario ground traffic is likely to be a key concern. Major airports are widely recognized to be very large scale traffic generators. Traffic on an average weekday at Logan Airport in Boston amounted to 86,000

TABLE 1
Land Use Compatibility

	—Yearly day-night average sound level, L_{dn} , in decibels—					
	Below 65	65-70	70-75	75-80	80-85	Over 85
Residential						
Residential other than mobile homes and transient lodgings	Y	N(1)	N(1)	N	N	N
Mobile home park	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
Public Use						
Schools	Y	N	N	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
Commercial Use						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale & retail-building materials, hardware & farm equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade-general	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(6)	Y(7)	Y(8)	Y	Y
Livestock farming and breeding	Y	Y(6)	Y(7)	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor sports arenas and spectator sports	Y	Y(5)	Y(5)	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts and camps	Y	Y	Y	Y	Y	Y
Golf courses, riding stables and water recreation	Y	Y	25	30	N	N

Key to Table 1 — Numbers in parentheses refer to notes on next page

Y(yes)= Land use and related structures compatible without restrictions

N(No)= Land use and related structures are not compatible and should be prohibited

NLA - Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.

25,30, or 35= Land use and related structures generally compatible; measures to achieve outdoor-to-indoor Noise Level Reduction of 25,30 or 35 dB must be incorporated into design and construction of structure.

Source: Title 14, Code of Federal Regulations, Part 150.

*The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, State, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

Notes For Table 1

(1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered an individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.

(2) Measures to achieve NLR 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

(4) Measures to achieve NLR 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal level is low.

(5) Land use compatible provided special sound reinforcement systems are installed.

(6) Residential buildings require an NLR of 25.

(7) Residential buildings require and NLR of 30.

(8) Residential buildings not permitted.

vehicles in 1990. Airport traffic poses one of the most serious impacts to the immediately surrounding area and to a region as a whole. Even with a high-speed rail link a new International airport at full scale operation is likely to have a major effect on the existing roadway system adding considerable traffic to major highways which are already highly congested. Issues associated with traffic and the rail link have already been discussed above at some length. The feasibility study should be asked to provide forecast mode split data together with traffic assignments and level of service assessments for the major roadways serving the airport and the region.

Air Quality

Major jetports generally have negative effects on air quality. These effects include jet fumes which adversely affect air quality. Usually more important, however, is the effect of all the new ground traffic on air quality. It is the cars and trucks which degrade air quality the most around many airports. This is particularly the case when traffic reaches congested levels and is slow moving. Major pollutants include carbon monoxide, hydrocarbons, particulate and oxides of nitrogen.

Water Quality

A major jetport at the Calverton site might have very serious impacts on drinking water quality. All of Nassau and Suffolk Counties re designated by the EPA as a sole source aquifer. Maps from a draft ground water study conducted by the New York State Department of Environmental Conservation show that the Calverton site lies right over what the state considers to be a major groundwater recharge protection area. A draft study by the Long Island Regional Planning Board (LIRPB) entitled Special Groundwater Protection Area Project also identifies the area around the airport as belonging to the Central Suffolk Special Groundwater Protection District (SGPA). Based on a review of these sources, the airport site appears to lie directly over one of the principal groundwater recharge areas of an aquifer system that provides drinking water to major portions of Suffolk County. Furthermore, according to the LIRPB's draft report, this area is also considered to be an

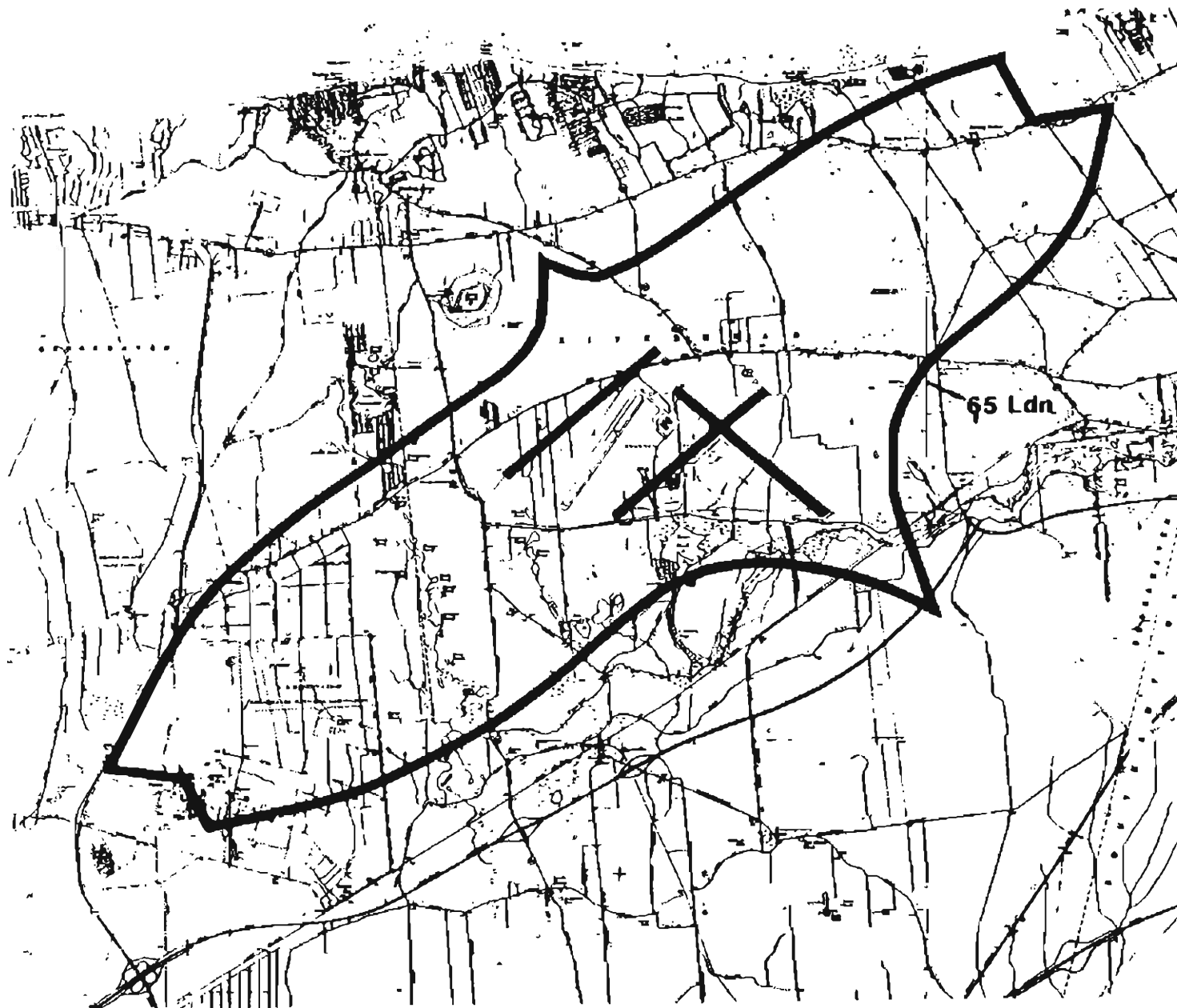


Figure 1

**Calverton Airport
Hypothetical Noise
Contours**

Configuration A

Contemporary Fleet Mix

NOTE: The runway configuration and noise contours shown on this map are purely hypothetical and are shown for illustrative purposes only.



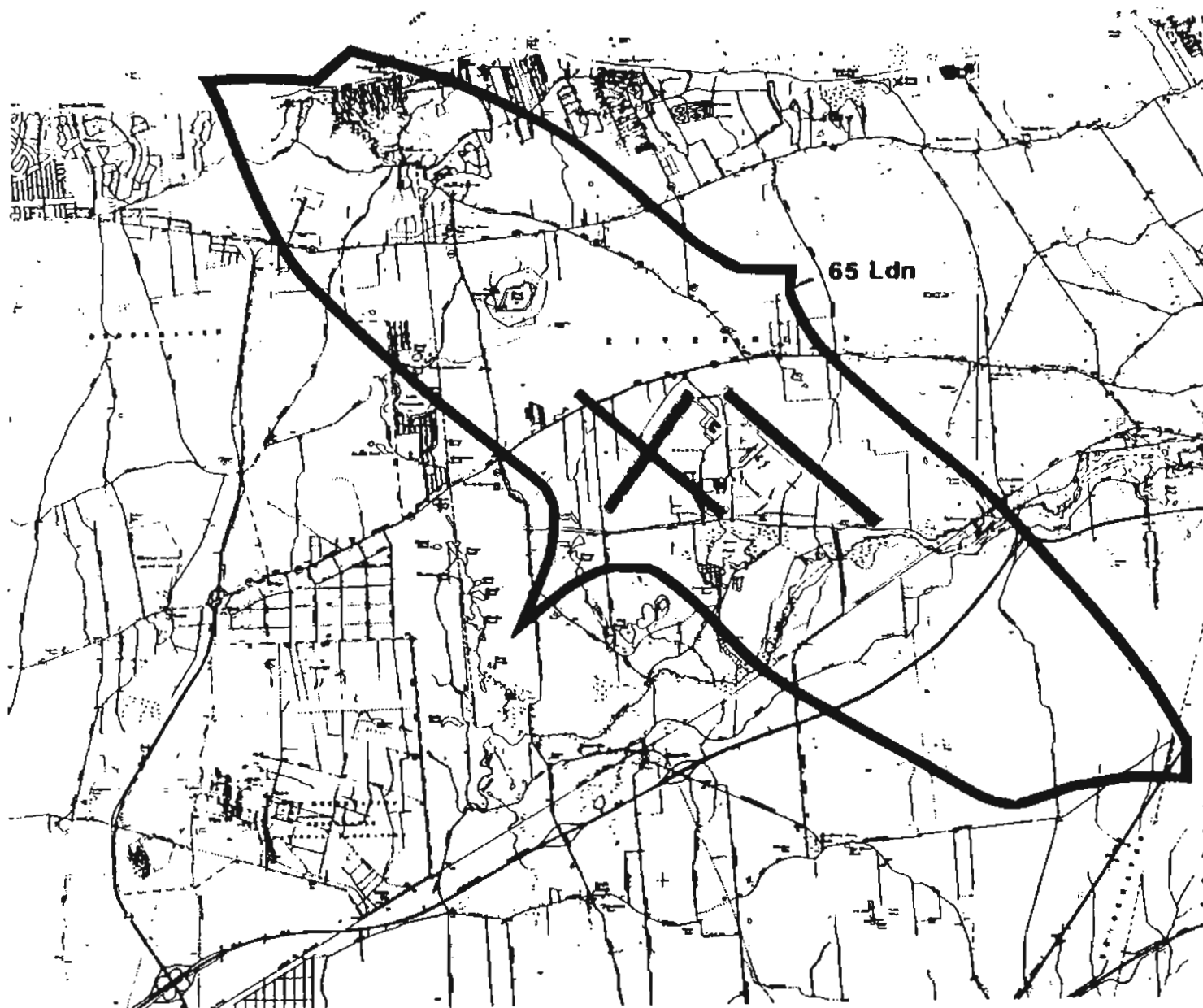


Figure 2

**Calverton Airport
Hypothetical Noise
Contours**

Configuration B

Contemporary Fleet Mix

NOTE: The runway configuration and noise
contours shown on this map are purely hypo-
thetical and are shown for illustrative pur-
poses only.



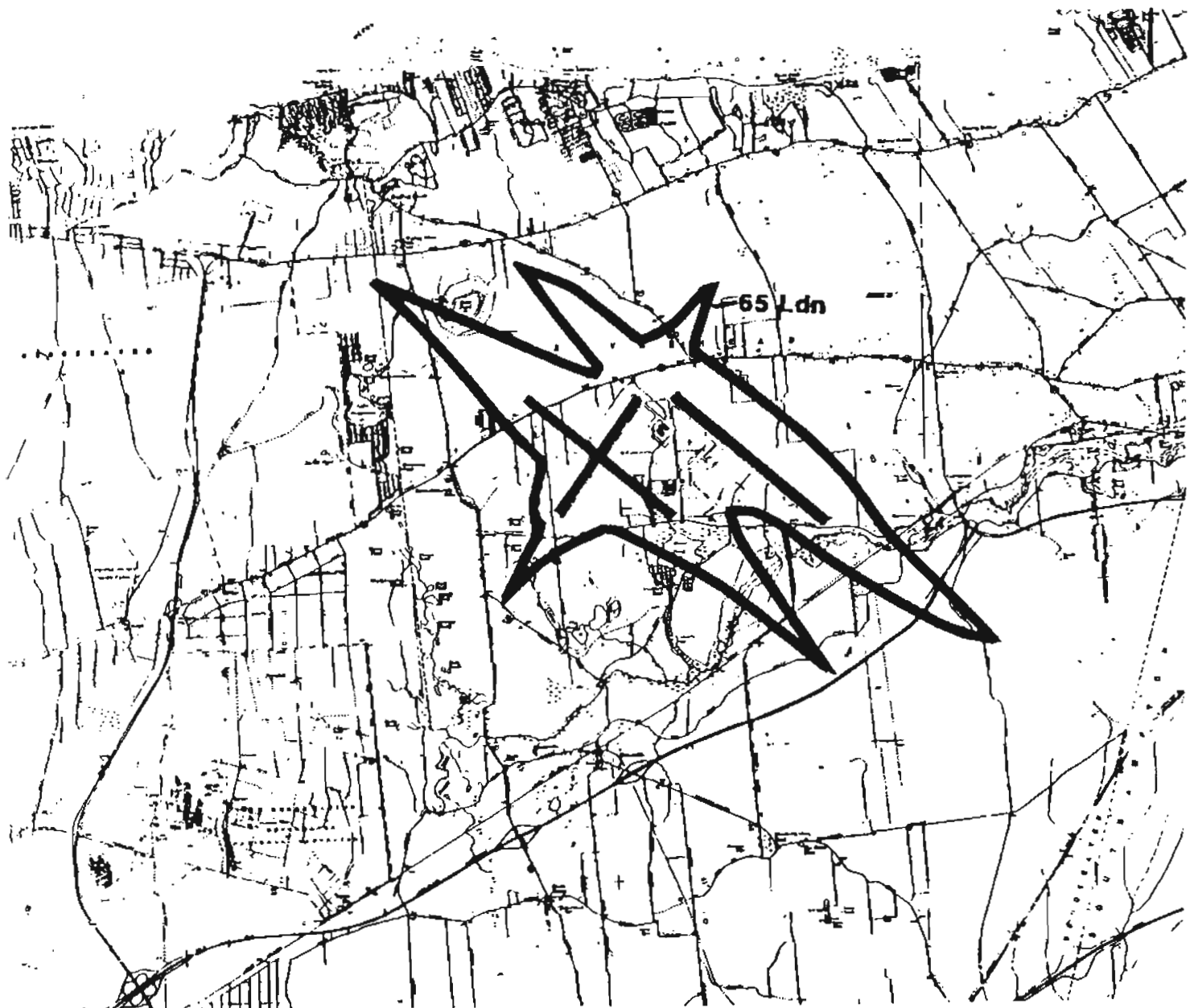


Figure 3

**Calverton Airport
Hypothetical Noise
Contours**

Configuration B

" All Stage 3 Fleet Mix

NOTE: The runway configuration and noise contours shown on this map are purely hypothetical and are shown for illustrative purposes only.



area of critical environmental concern. The report goes on to quote Section 55 of the New York Environmental Conservation Law:

For the purposes of this article "special groundwater protection area" shall be classified as a critical area of environmental concern as used under article eight of this chapter.

This section of the law basically requires that more stringent environmental review procedures be applied to projects within such areas.

In respect to ground water resources the Calverton site appears in some respects to resemble Camp Edwards/Otis Air Force Base on Cape Cod which has comparable geology. Two sites on that complex were considered as possible candidates for a second major airport in Massachusetts. However the location of Cape Cod's sole source aquifer under the sites was considered an important deterrent to major airport use. The Camp Edwards sites were located on relatively higher ground than many of the surrounding communities. In a series of environmental studies conducted for the military ground water was generally found to flow downhill from Camp Edwards to wells in the surrounding communities. In the past, this has led to contamination problems in wells in adjoining Falmouth. (Traces of effluent from the sewage treatment plant at Otis Air Base were found in one of the town wells.) A major study of elevated cancer rates in the Upper Cape area is also underway. It has been suggested that there may be links between hazardous waste sites on Otis and the elevated cancer rates in the area, although no linkage has yet been established.

Unlike Camp Edwards, Calverton appears to lie at a somewhat lower elevation than some of the surrounding land, placing the airport within the Peconic River system. This could mean that run-off from the facility could potentially affect the Peconic watershed system which leads into Peconic Bay, as well as wells lying within or near this system. Because the site is over a deep flow recharge area, run-off could eventually affect an even wider area due to the nature of groundwater flow patterns in the aquifer system.

EPA designation as a sole source aquifer means that the federal EPA review will be required for any federally assisted projects on the aquifer (hence in all of Nassau and Suffolk Counties) to assess their potential for contaminating the aquifer. This review could prevent a commitment of federal funding or could cause a redesign of the project. It is highly likely that federal funding will be required for Calverton. In fact federal funding is already being received for the current feasibility study effort.

Designation of the area as an SGPA is also a key concern. As the Long Island Regional Planning Board's draft report Special Groundwater Protection Area Project states:

These areas (SGPA's) are significant, largely undeveloped or sparsely developed geographic areas of Long Island that provide recharge to portions of the deep flow aquifer system. There is urgent need to maintain them as sources of high quality recharge. They represent a unique, final opportunity for comprehensive, preventive management to preclude or minimize land use activities that can have a deleterious impact on groundwater. Therefore, the protection of groundwater in these areas is a first-order priority.

Expanded airport facilities at Calverton could affect groundwater resources in a number of ways. These could include reduction of recharge due to construction and paving overpumpage of water to serve new airport facilities and degradation of groundwater quality.

Potential pollutants which could degrade water quality include fuel leaks from fuel storage and fueling operations on the airport, airport sewage treatment effluent, storm water run-off from the runways and access roads including salt and/or other de-icing chemicals used on the runways and roadways as well as metallic compounds, and de-icing chemicals used on the aircraft including ethylene and propylene glycols. According to the recently published Boston-Logan Airport Draft Generic Environmental Impact Report, ethylene glycol is considered a moderately toxic substance when undiluted. Although propylene glycol is considered non-toxic it has a higher biological oxygen demand (BOD) and may therefore tend to deplete oxygen in receiving

waters. This could have negative consequences for the waters leading into Peconic Bay.

Section 4(f) Impacts

Federal statutes administered by the U.S. Department of Transportation (USDOT, known as Section 4(f) protect certain types of public park, conservation and recreation land as well as historic property. USDOT and FAA guidelines are quite stringent with respect to Section 4(f).

Specifically, Section 4(f) of the USDOT Act prohibits the use of land from a significant publicly owned park, recreation area, wildlife refuge, or land from any significant historic site unless the Secretary of Transportation or his designee determines that (a) there are no feasible and prudent alternatives to the use of the land from the property; and that (b) the proposed action includes all possible planning to minimize harm to the property which might result from the proposed use.

In order to support a case for development of the land, documentation must be submitted which shows that there are unique problems or unusual factors involved in the use of alternatives that avoid the properties, or that the cost, social and environmental impacts, or community disruption resulting from the alternatives reach extraordinary magnitudes.

Depending how the airport is planned, it may require use or taking of some of the surrounding recreational properties and wildlife areas. These may fall under Section 4(f). The alternatives requirements can be quite stringent, requiring the proponent potentially to describe why no other alternative use for this site is viable and/or why no other viable site for an airport is possible for the region.

Wetlands

Wetlands are considered to be one of the key indicators of a site's sensitivity to development activities. At the federal level wetlands are regulated under Section 404(b)(1) of the Clean Water Act, both the EPA and the Army Corps of Engineers (ACOE) provide close scrutiny of a project's potential impacts on wetlands. There are also state regulations re-

garding wetlands. Most regulations are aimed at prevention of loss of wetlands.

At Calverton, a study of available USGS mapping shows that there are a series of wetlands and ponds to the south of the airfield. These appear to be associated with the Peconic River system. Depending on the type of improvements which may be required to the airfield to handle projected operations, it is possible that there may be some impact to these wetlands.

Rare Species/Ecosystems

A New York Department of State (NYDOS) Coastal Fish & Wildlife Habitat Rating Form shows the Peconic River as a rare ecosystem which contains such vulnerable species as tiger salamander and spotted turtle. According to the Long Island Regional Planning Board's draft report Special Groundwater Protection Area Project many rare and endangered species can be found in or near the extensive Peconic River wetland system. Pages from that report documenting some of these species are included in Appendix A to this paper. Additionally the report states that New York State has designated the Peconic River and its environs as a Wild, Scenic, and recreational River, and NYDOS has designated it as a Significant Fish and Wildlife Habitat.

Calverton airport is also located within Long Island's Central Pine Barrens, a unique ecosystem which is currently the focus of a preservation initiative.

Employment Impacts

Although a number of employment figures have been cited, it should be borne in mind that these jobs may not materialize for some time. Just to get a cargo port operating may take 5 to 10 years to clear environmental approvals, do the necessary design and construction, establish markets and attract carriers. All this will do very little for jobs that are being lost this year. A major international jetport will take much longer to put in place with the tract record being anywhere from 10 to 20 years or more.

Another important consideration is whether the jobs created at Calverton will be new jobs or relocation of jobs which presently elsewhere in the region. This is an important consideration for each of the different scenarios: for passenger service, cargo and maintenance. If any of the new activities established at Calverton mean establishing market share at the expense of other existing airports in the region then, similarly, the new jobs at Calverton may come at the expense of existing jobs in Queens and New Jersey.

The feasibility report should contain a complete analysis of this key issue.

Land Use

Land use may be the single most important category of impact when considering the type of change which can be brought about by a major airport. Of principal concern are the induced land use impacts which may be expected over time. Induced development can be characterized as secondary and tertiary development which occurs as a result of having a major airport nearby.

Secondary development can take many forms but frequently consists of such uses as cargo-related (such as warehousing and freight forwarders), package express services, rental car uses, commercial office, light industrial and hotel uses which spring up in close proximity to the airport. This type of secondary development can substantially change the character of an area for several miles surrounding an airport, frequently resulting in displacement of existing uses.

A new airport can also act to spur other development further away as corporate headquarters and other major facilities to whom airport proximity is important choose locations within a convenient distance from the airport. These developments may, in turn, spur the growth of new homes as people move closer to new employment centers. New roads may be built and existing ones expanded to accommodate increased activity. The general trend is likely to be toward increased urbanization throughout the area. The secondary development which directly adjoins the airport can grow up relatively quickly and can mean a disproportionate

shock of change occurring over a short period of time in the immediately surrounding area.

The combination of both types of induced development can have profound regional impacts in terms of gradually increasing development density area-wide together with increased traffic and other concomitant effects. This trend toward increased urbanization can be irrevocable. Clearly, a decision to site a major airport in Eastern Long Island has very broad land use implications. In fact, if nothing is done to control future land use impacts, the decision may be considered tantamount to adopting a policy of increased urbanization of the eastern end of the island along the same pattern as the western end. It is this very policy issue which seems to be at the core of the Calverton question. Ideally, long range land use policy for Eastern Long Island should be established in a forum with broad public participation aimed at achieving a consensus about future land use. This forum should address the basic question of whether the East End should be allowed to develop on the pattern of the West End or should be preserved as a regional recreational and rural/environmental resource. These questions should be resolved before any decision is made about an airport at Calverton.

Policy and other questions aside, if for whatever reasons an airport must be sited at Calverton, there are a number of actions that should be considered to manage future growth. To the extent that much of the development can be kept within the proposed airport footprint, the better are the chances for controlling it and creating buffers between the spin-off development and surrounding uses.

The opportunities for control can be increased by reserving special areas or zones around the airport specifically for the purpose of accommodating expected spin-off development. Plans can be made to channel traffic from these areas through major airport access roads directly to limited access highways, keeping it off of local streets and roads. Advantage can also be taken of mass transit systems (bus and rail) which may serve the airport.

Land within these specifically designated growth management zones could be controlled through local zoning or

other means such as direct acquisition and sale or lease. Transfer of development rights (TDR's) or other incentive means such as tax increment financing are other methods which are sometimes considered. Aggressive marketing combined with strict controls elsewhere can be used to channel other, tertiary development to these zones as well. Development of broader surrounding areas could be controlled by zoning on the agricultural model, perhaps limiting development to residential or agricultural use at the rate of one dwelling unit per 25 acres. Combination of this type of zoning with TDR's for development within managed zones might be an alternative worth pursuing if a major commercial airport must be sited at Calverton.

Each of these initiatives may require complex coordination efforts and legal agreements between private owners, local municipalities, the county, the state and even the federal government.

Preliminary Conclusions

There are several tentative conclusions about the project which may be advanced at this early stage. First, what is the current proposal for Calverton? It seems possible that what is being proposed is a phased development plan involving immediate use of the facility as a cargo port/regional airport/maintenance center with long term plans for a major international airport. If this is the case, then the potential for the ultimate development phase should be openly examined from the outset together with expected environmental impacts and land use consequences. If this is not what is ultimately envisioned then legally binding covenants of some kind should be considered to prevent any such future outcome without adequate public and environmental review.

For each and every one of the different scenarios proposed for the airport a thorough market analysis should be conducted which fully addresses Calverton's location in the region and the effect of other existing competing centers. The study should also address the airport and airfield

configuration, planned operations, levels, passenger traffic levels and other data mentioned above in order to fully assess the feasibility and market for the proposal. Additionally, if phased development is actually planned, then the study must be asked to present and analyze in detail the ultimate plan including its market feasibility, costs and environmental impacts, as stated above.

The cargo port, regional airport and international jetport concepts all share difficulties of competition from well established existing centers as well as an off-of-center location with difficult regional access. In addition to existing centers, there may also be the question of competition from potential new centers such as McGuire Air Force base in New Jersey. The maintenance center idea may be a workable concept for Calverton with positive employment benefits and potentially limited impacts. However, any such concept should be carefully evaluated for potential impacts to the aquifer system.

Each of the scenarios under discussion may have important environmental consequences. The international transfer jetport will have the greatest impacts. Furthermore, if the market should prove feasible for the international transfer concept that somehow does not take market share from existing facilities at Newark and Kennedy, then this may mean establishing new transfer routes and services that presently do not exist in the New York region. Some of these new activities may have to be attracted from other Northeast airports. Such an outcome could act to concentrate the impacts of international jet activity for much of the Northeast Corridor on Long Island which is already home to two major jetports handling a total of over 50 million passengers per year.

While the need for a new purely International transfer airport on Long Island may be questioned, it is entirely possible that, in the long term, a fourth major jetport for the New York area may be required to meet ever increasing levels of regional air travel demand. It is quite possible that such a facility may offer both domestic and international service and may include both O/D and transfer activities. The need for such a facility should ideally be the focus of a regional

airport system study. Should need be determined, the system study should logically be followed by a siting study which would identify and evaluate all the potential sites for such a facility in the tri-state region. Such a study should be done prior to making any decision to locate such a major jetport at Calverton.

In terms of specific categories of impacts, land use, water quality and ground access may be the most major considerations in this location. The land use question is probably the most vital, and calls for a major public forum to resolve this specific question prior to making any firm decision about the redevelopment of the airport. The land use question seems particularly critical in view of the already high level of airport activity on Long Island and the rapid urbanization of what is arguably a vital regional recreational and environmental resource.

Appendix D-1

Listing of rare species in the Peconic River Area
Excerpted from the Special Groundwater Protection
Area Project by the Long Island Regional Planning Board

Rare and Endangered Species and Significant Habitats

The Central Suffolk SGPA is not only the largest SGPA but contains the greatest number of habitats of rare and endangered species. A total of 137 natural elements were reported within its boundaries. Among the habitat communities identified in this SGPA by the Natural Heritage Program are pitch pine-oak-heath woodland, dwarf pine plains, coastal plain Atlantic white cedar swamp, pine barrens shrub swamp, coastal plain pond shore, cardinal flower and coastal plain poor fern.

Many rare and endangered species can be found in or near the extensive Peconic River wetland system. Especially high concentrations of species were located west of Wading River/Schultz Road among a chain of ponds and asso-

ciated wetlands. Species common throughout this region include the pine barrens gerardia (R), lespedeza (R), coastal barrens buckmoth (SC), and tiger salamander (E). Several individual occurrences of species were also noted within this SGPA. The grasshopper sparrow (SC) and northern cricket frog (T) have been reported near Swan Pond in Riverhead. Tall tick-clover (T) and the silvery aster (S) have been sighted in the Manorville area. Two threatened animal species, the osprey and a rare turtle species, have been reported as ranging throughout the Penny Pond and Wehrman's Pond area in Southport.

New York State has designated the Peconic River and its environs as a Wild, Scenic, and Recreational River and NYS-DOS has designated it a Significant Fish and Wildlife Habitat. This river corridor habitat extends approximately 15 miles from County Rte. 73, in the center of Riverhead, to the river's tributaries in the western portion of Peconic River County Park. Nearly all of the upper watershed remains relatively undisturbed. The river supports extensive bog and freshwater marsh communities. The entire length of the Peconic River is a productive habitat for warm water fisheries. Some of the more abundant species that naturally reproduce here include largemouth bass, yellow perch and chain pickerel. In addition, the Peconic River is one of only two localities in the State that support populations of banded sunfish.

The abundant fisheries resources of the Peconic, support a recreational freshwater fishery of regional significance. The river's associated wetlands furnish an outstanding habitat for a variety of avian wildlife, including Canada geese, black duck, great blue heron, white-tailed deer, and little brown bat. Peconic River County Park provides public access to the river's fish and wildlife resources.

Giltham & Gander Associates, Inc.
Architecture Planning Urban Design

Firm Qualifications

Gillham & Gander is a planning and architectural firm specializing in the fields of airport planning, transportation, and urban design. Oliver Gillham and Carol D. Gander, the principals of the corporation, are registered architects with a combined total of more than 26 years of experience. Mr. Gillham, an architect and urban designer, has performed extensive work in both the public and private sectors on airport and transportation projects, master plans, mixed-use developments, and urban design programs. Ms. Gander has specialized in architecture, urban design and project management including a wide range of office, retail, hotel and transportation projects.

The firm is currently at work on a broad array of airport and transportation projects including a \$1 billion terminal area modernization plan for Logan Airport in Boston, a proposed new transit station in South Boston, and planning and design services for the New Bedford/Fall River Commuter Rail Restoration Project, a fifty mile extension of Boston's commuter rail system with seven new stations. Gillham & Gander also served as Task Area Manager of Landside Planning for a site selection study for a second major airport in Massachusetts. Other recent projects have included a facilities study for Hanscom Air Terminal in Bedford, MA, and aeronautical consulting services for a land use plan for a four square mile area surrounding the Bangor International Airport.

At Logan Airport the firm is involved in planning and programming activities for a series of new airside and landside terminal projects including replacement of Terminal A, a new parking garage and centralized rental car facility, a new central transportation terminal, and a planned interterminal ride system. Gillham & Gander is also collaborating on the environmental review, permitting and community participation aspects of this project. For the Second Major Airport Study Gillham & Gander performed a range of key landside and land use planning tasks including development of prototypical airport layout plans for testing alternative sites as well as land use data base devel-

opment and analysis. At Hanscom Field Gillham & Gander's scope of work included space programming based on design peak hour loads, development of alternative planning scenarios for increased air carrier use and production of a project definition manual for new commuter airline terminal facilities. The Bangor project included planning work to help define the 20 year aeronautical land use envelope for the airport as well as layout of alternative options for development of future cargo and maintenance areas and parking facilities.

The principals of Gillham & Gander also have substantial prior experience in planning, design and community participation for large scale transportation projects. Mr. Gillham was formerly the Senior Urban Designer for the Massachusetts Port Authority where he was Planning Coordinator for the CHART project which examined new highway connections and terminal area development patterns at Logan Airport in the context of the I-90/I-93 project. In support of the CHART project Mr. Gillham developed a comparative study of 20 major U.S. airports assessing relative terminal area facilities, passenger loads, airport organization and use. As Senior Urban Designer with Skidmore, Owings & Merrill, Mr. Gillham was involved such projects as the I-90/I-93 EIS and planning for the Bird Islands Flats Cargo Terminal Area at Logan Airport. In the area of transportation terminal facilities, Mr. Gillham played a principal role in the planning and design of the Harvard Square MBTA Station in Cambridge, a major intermodal bus and rail transit station in Cambridge, and was also involved in the planning and design of the South Station Transportation Center and Red Line Station.

Ms. Gander's previous experience includes urban design work on the Central Artery North Area Project and on the Cambridge Center Plan as well as design work on the intermodal JFK/U.Mass. MBTA Station. Ms. Gander is currently serving as Project Manager for the World Trade Center Station on the proposed South Boston Piers/Fort Point Channel Underground Transitway and as Project Architect on the New Bedford/Fall River Commuter Rail Restoration project.

The transportation planning and design expertise of the principals and staff of the firm is highly relevant to the array of planning issues and concerns surrounding airport planning and development projects. The firm has significant experience in the key areas of airport facilities programming and planning as well as ground transportation, passenger and cargo terminal design with a special concentration in the issues associated with design for intermodal transfer. In addition the firm has an established track record in large

and small scale urban design, public participation and land use planning projects for a wide variety of different communities. Public participation experience includes highly controversial waterfront, transportation and master planning projects. Many of these have involved large scale public meetings as well as regular work sessions with advisory committees and project task force groups.

APPENDIX E - Questionnaires

Airline/Freight Forwarders/Customs Brokers Questionnaire Economic Feasibility Study - Calverton Airport

The Long Island Regional Planning Board is studying the feasibility of developing an air cargo facility at Calverton Airport. If you could take a moment to answer a few questions, it would help us to better understand the air freight business and to understand what your needs at Calverton might be.

Company Name _____

Address _____ Zip Code _____

Your position _____

Type of Firm: Freight Forwarder _____ Customer Broker _____

Airline _____

1. At what New York airports are you currently located? _____

What types of facilities do you have there? _____

How many people do you employ there? _____

Do you currently face any delays caused by airport congestion? _____

2. What factors affect your decision to locate at a particular airport? _____

3. Do you think that the New York Region needs an additional air cargo facility? _____

4. Would you consider locating a small operation at Calverton Airport? _____

What circumstances would induce you to locate an operation there? _____

What facilities would you like to see there if a cargo airport is developed? _____

Would you have problems with split operations at several airports? _____

Questionnaire - (Cont'd.)

January 6, 1993

The Long Island Regional Planning Board has been asked by the Federal Aviation Administration to study the feasibility of developing an air cargo facility at Calverton Airport. Calverton Airport is located in eastern Suffolk County on Long Island. It is currently operated by the Grumman Corporation under contract with the U.S. Navy. The airport contains space for industrial development. We are examining the feasibility of instituting commercial cargo flights and jointly operating the airport with Grumman as a cargo airport. We believe that the availability of air cargo facilities in eastern Long Island could serve as a catalyst for the economic development of eastern Suffolk.

As part of the study, we are trying to determine to what extent cargo airlines and freight forwarders currently operating out of Kennedy Airport would be interested in using air cargo facilities at Calverton if they became available.

Could you or an employee designated by you take a moment to answer the attached questionnaire. The answers to these questions will be critical to our findings.

Thank you for your help.

Sincerely,

Lee E. Koppelman
Executive Director

LEK:PK:p1 Enclosure

Questionnaire - (Cont'd.)

Airline/Freight Forwarders/Customs Brokers Questionnaire Economic Feasibility Study - Calverton Airport

Company Name _____

Address _____ Zip Code _____

Your Name and Position _____

Type of Firm: Freight Forwarder _____ Customs Broker _____

Airline _____

1. Would your firm consider using air cargo facilities at Calverton Airport?

Yes _____

No _____

Maybe _____

Could you briefly explain this answer?

2. What circumstances would induce you to use air cargo facilities at Calverton Airport? (Note: We are not asking for a commitment to relocate your existing facilities to Calverton. We are attempting to ascertain your possible interest in routing cargo aircraft to Calverton if cargo facilities become available there).

APPENDIX F AIRPORT LAYOUT PLAN Calverton Airport

General

The overall airport development plan design for the Calverton Airport facility is based on the airport's existing facilities, the anticipated development as identified in the *Airport Joint Use Feasibility Study*, and the facility requirements related thereto.

The *Airport Layout Plan* (ALP) assumes that the existing facilities, within a triangular area between the runways comprised of 944 acres, will continue to be utilized by Grumman Aerospace. A discussion of the proposed facilities, both airside and landside, are complemented by drawings which are in compliance with FAA requirements (AC 150/5300-13, Appendix 7).

The exception to the requirements will be the *Terminal Area Plan* and the *Stage Development chart*. Since the current use is primarily military and the proposed joint-use will add commercial cargo and aviation maintenance facilities there would be no demand for a "terminal". Any timed staging of development would be a hypothetical exercise inasmuch as the development concepts are emanating from a "feasibility" study and not from an airport master plan approach.

The airport is classified a transport-category commercial service facility which can accommodate aircraft with approach speeds greater than 141 knots, but less than 166 knots (Approach Categories "C" and "D") with wingspans 192 feet up to, but not including 262 feet (Airplane Design Group VI).

Aeronautical Forecast

Less than 6,000 operations per year (a landing or a takeoff) are forecasted, with 5,000 of these representing the continued Grumman-military activities and 750 operations per year attributed to the proposed "modest" commercial cargo operations. Should the cargo operations expand to levels similar to Stewart Airport an increase to 3,000 cargo

operations per year would be realized which, added to the Grumman-military activity totals 8,000 operations annually.

Approach & Obstruction Plan

The drawing presented in Figure ALP-1 depicts the imaginary surfaces on and around Calverton Airport through which no object should penetrate. The runway approach contours and obstructions are presented in Figure ALP-2. Both these drawings are in accordance with the criteria outlined in Federal Aviation Regulations (FAR) Part 77, *Ob-jects Affecting Navigable Airspace*.

Imaginary Surfaces

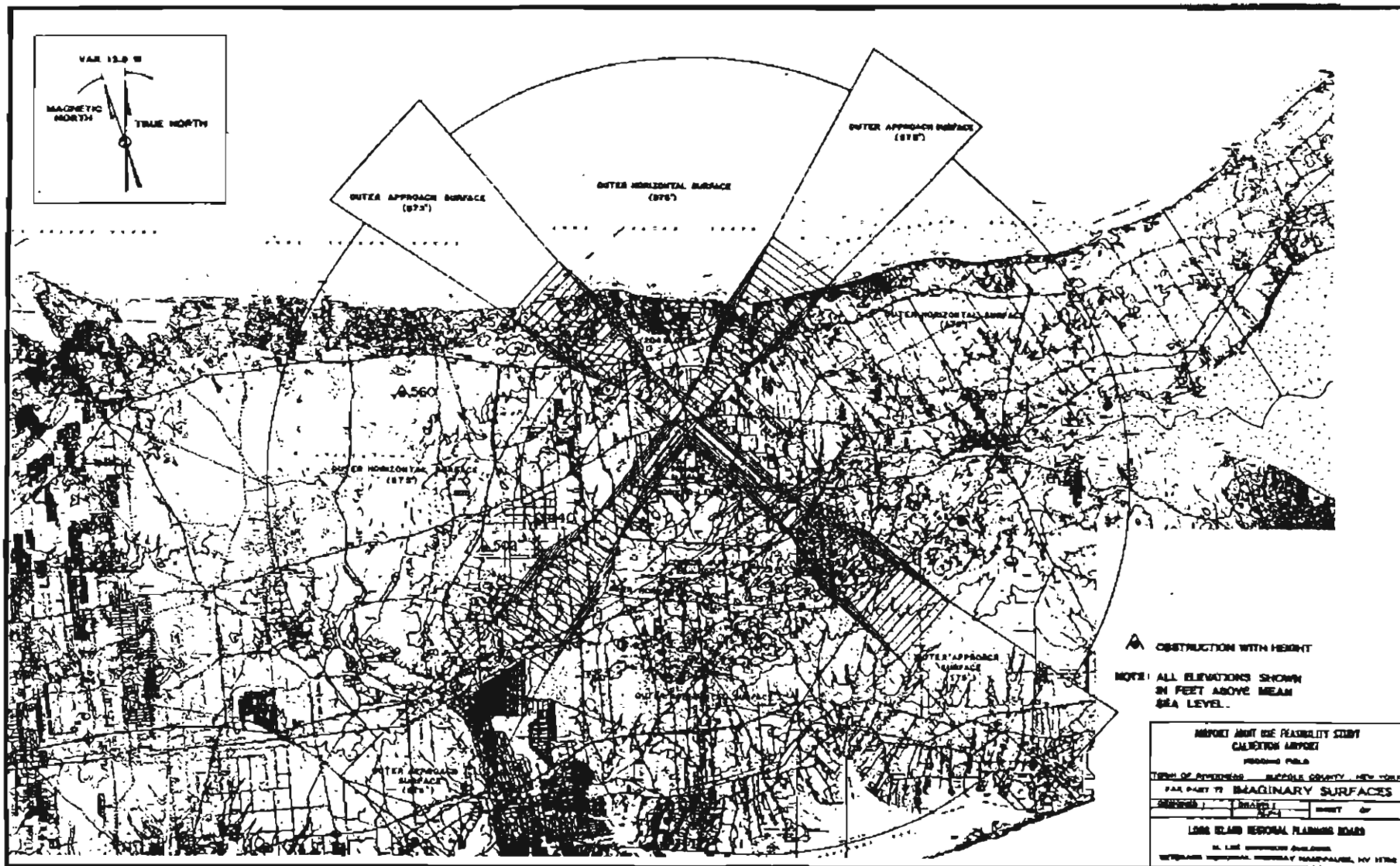
The characteristics and dimensions of the following five surfaces impact upon the utilization of the runway and the mitigation actions necessary to address any obstructions that exist within the aviation environs of the airport. The runways at Calverton Airport have a heavy transport-category.

The primary surface is an area, at ground level, longitudinally centered on each runway. The runway Primary Surfaces extend 200 feet beyond the threshold of each runway. The widths of the runway Primary Surfaces are 1,000 feet.

The approach surface is an area longitudinally centered on the extended runway centerline, extending upward and outward from the end of the primary surface at a designated slope. Runways 32, 5, 23 have a slope of 34:1 for a distance of 10,000 feet to an outer width of 3,500 feet. Runway 14, (the designated ILS approach runway) has a slope of 50:1 for the first 10,000 feet, and a slope of 40:1 for the next 40,000 feet and an outer width of 16,000 feet.

The transitional surfaces extend outward and upward at right angles to the edge of the Primary Surfaces and Approach Surfaces at a slope of 7:1.

A horizontal surface is formed by a horizontal plane 150 feet above the established airport elevation of 75 feet MSL



at a distance of approximately 10,000 feet from the runway end or runway centerline.

The conical surface extends upward and outward from the periphery of the Horizontal Surface at a slope of 20:1 for a horizontal distance of 4,000 feet.

While several structures (communication towers) are located adjacent to the airport, as noted on ALP-1, they do not obstruct the runway approaches identified under FAR Part 77 regarding man-made objects or terrain. The only penetration of a runway inner-approach surface is the treeline on the Runway 32 approach. The trees are located 800 feet from the end of the runway (elevation 52 feet MSL) approximately 35 feet in height but rise from an elevation of less than 35 feet MSL south of Grumman Boulevard.

Runway Protection Zones (RPZ)

Runway protection zones are shown on the Existing Airport Layout (Figure ALP-3) and the Airport Layout Plan (Figure ALP-4). The **RPZ** is a zone of protection against the encroachment of man-made structures and natural growth obstructions. The preceding approach surface dimensions also determine the dimensions of the RPZ, an area at ground level that provides for unobstructed passage of landing aircraft through the above airspace. The RPZ begins at the end of the primary surface

The dimensions of the RPZ for Runway 14-32 has an inner width 1000 feet at the end of the primary surface, extending for a distance of 2,500 feet to an outer width of 1,750 feet. Runway 5-23 has an RPZ with an inner width of 1,000 feet extending for a distance of 1,700 feet having an outer width of 1,425 feet.

Runway Safety Area (RSA) is a defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot from the runway. For Airplane Design Group IV the RSA width is 500 feet by 1,000 feet in length from the end of the 400 foot long blast pad.

Runway Obstacle Free Zone (OFZ) This is an area which supports the transition of ground to airborne aircraft opera-

tions (and visa versa). The OFZ standards preclude taxiing and parked airplanes and object penetrations. The Runway OFZ at Calverton Airport has a width of 400 feet and extends 200 feet beyond each end of the runway.

Proposed Development

The findings of the Feasibility Study are the basis for the proposed development. The new development would occur in areas outside of the Grumman triangle, with aviation-related uses being sited adjacent to the existing runways, and industrial parks being located away from the flight line. The overall development of the airport is shown as the "Airport Layout Plan" on Figure ALP-4, which identifies detailed development along each runway and the balance of the airport.

Runways With consideration of the need for advanced navigational requirements by commercial aircraft operations, the Airport Layout Plan reflects a precision Instrument Landing System (ILS) for Runway 14-32, with a 50:1 approach slope to Runway 32.

No extensions or improvements are proposed for the existing 200 foot wide runways with lengths of 7,000 feet and 10,000 feet respectively, which with their 50,000 lbs per wheel pavement strength could accommodate large commercial aircraft. If the obstruction of trees on the Runway 32 approach (cited under Obstructions) is unacceptable then displacement of Runway 32 may be necessary.

Taxiways While there exists two full-length parallel taxiways (75 feet wide) adjacent to the Grumman facilities, these taxiways would be off-limits to the commercial aircraft due to the stringent prevention practices to avoid debris damage which are conducted around high-performance military aircraft. The recommended taxiway development is for 75 feet wide full-length parallel taxiways on the commercial side of the runways adjacent to the new aviation uses.

Airside Development The proposed long term development scenario calls for aviation related uses (served by the new taxiway system) adjacent to both runways. On Runway 5-23 these uses are for new hangars, parking aprons, and support buildings for both an aircraft maintenance facility, and an aircraft retrofit facility. The airport

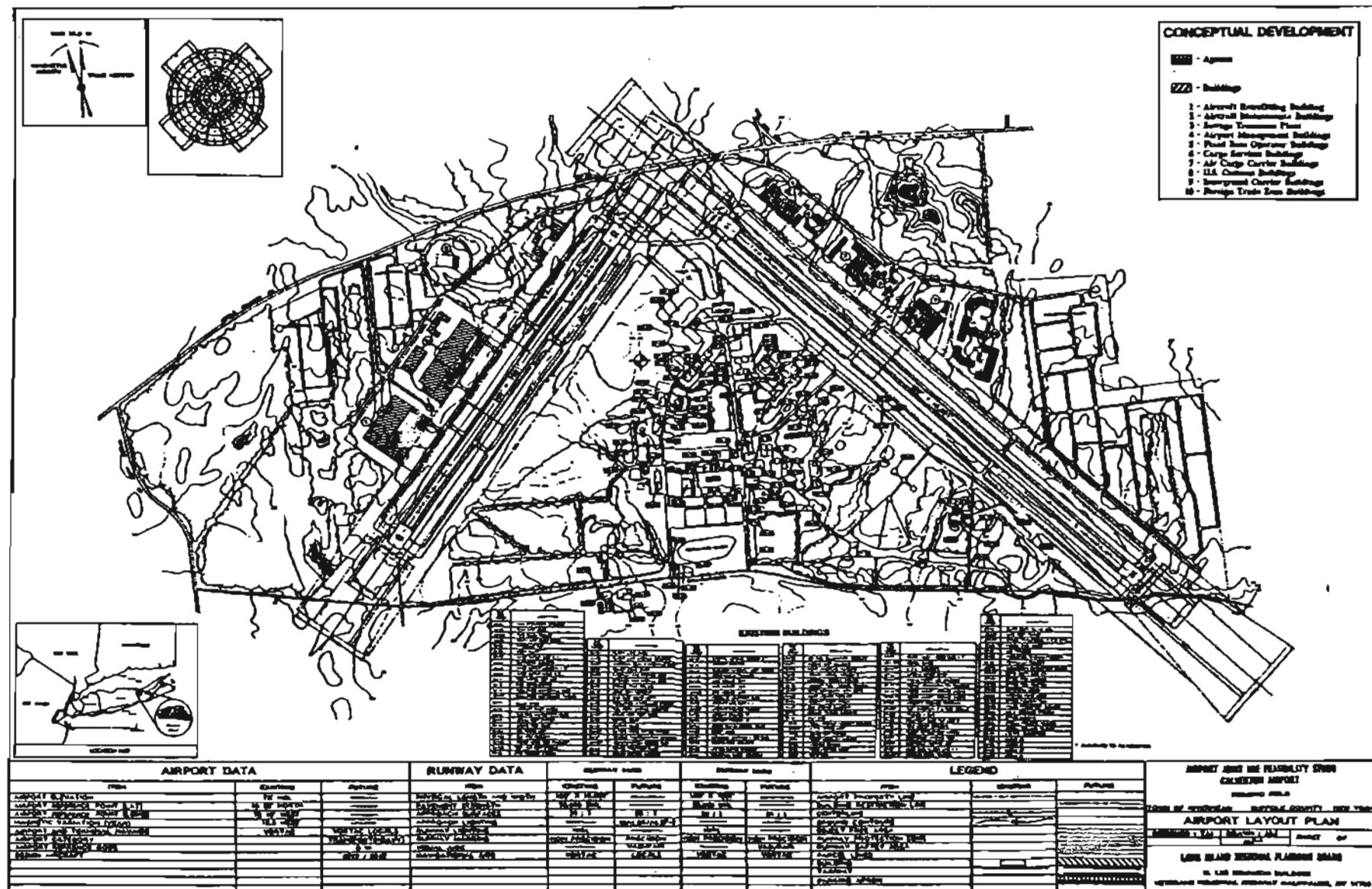


Figure ALP-4 Airport Layout Plan

management center is also located along this runway. Runway 14-32 accommodates the fixed base operator's hangars, apron, fuel service area, and an equipment center for air cargo services; the hangars, apron and support buildings for both a commercial air cargo operation, and an integrated carrier center; the U.S. Customs offices; and the multiple industrial buildings of a foreign trade zone.

Landside Development The industrial parks development on three sites adjacent to the aviation uses totals 280 acres with the largest park (213 acres) located next to Runway 14-32 on the east side of the airport. The new sanitary treatment plant, supporting the wastewater disposal activities at the airport, is located at the north perimeter of the fenced airport area.

On-Airport Road Network The on-airport road network will provide additional access points and link the commercial activities of both runway areas. This road network will accommodate the landside development (i.e. new industrial parks) in addition to the airside development. To minimize the conflict with the RPZ of Runway 14, the northern road link between the east and west commercial areas would have to be located immediately adjacent to Middle Country Road (NYS 25) but still inside the fence line of the airport. The location of the new south entrance into the proposed industrial park from Grumman Boulevard is influenced by the RPZ of Runway 32.

Off-Airport Land Use The land uses within a 10 mile radius of the Calverton Airport were surveyed. The comprehensive plans for future land uses prepared by the affected municipalities were evaluated with respect to the airfield configuration and approach surfaces as well as aircraft noise impacts. (A discussion of the municipal comprehensive plans is found in Chapter Four of the full report.)

There are no problems with regard to the outer-approach zones of Part 77 surfaces due to the airport's major land holdings in avigational easements within the runway approaches. The noise contour analysis conducted in the Feasibility Study indicated that the increase in Ldn contour area would be quite minimal and that the 65 Ldn contour is largely contained within the airport boundaries.

Noise mitigation measures such as preferential runway use and departure controls could be utilized to further reduce noise impacts on residential areas located to the northeast and southeast of the airport.

Capital Improvements Program

Communities adjacent to the Calverton facility should carefully weigh their capital improvement expenditures into noise sensitive areas. Unless the municipalities zoning and development controls can discourage development that is incompatible with the presence of an airport the extending of water or sewer services, will create future problems within the community adjacent to the airport.

Off Airport The proposed development of the Calverton Airport would require the funding for capacity improvements on existing roadways. The costs of these off-airport highway capacity improvements are shown in Table ALP-1 with an overall figure of \$22 million.

On-Airport Since the majority of the proposed development at the airport would be all new private-sector buildings their capital improvement costs would be for necessary infrastructure such as the road network, airport entrances, power lines, water lines and wastewater collection and treatment. The provisions of a coordinated capital improvements program for new development will be influenced by the management approach adopted by the airport owner/development sponsor.

Development Costs

Should the feasibility study prompt consideration of implementing the proposed development a schedule in support of the recommendations would be required. It would include the actions required, their sequencing, and the costs of the actions, as well as the financial obligations to be assumed by the Federal Government, the State of New York, the Airport Sponsor, and the private interests. To assist in identifying the potential costs of implementing the recommendations Table ALP-2 reflects 1992 unit costs for certain of the anticipated development items (not including design).

TABLE ALP-1
Road Capacity Improvements

<i>Route</i>	<i>From</i>	<i>To</i>	<i>Improvement</i>	<i>Miles</i>	<i>Cost*</i>
NYS 25	CR 46	North Entrance	One addl lane each way	9.1	\$ 9.3
CR 46	NYS 495	NYS 25	One addl lane each way	4.3	\$ 4.8
Wading River Rd.	NYS 495	NYS 25	Reconstruct existing 2 lane road	4.2	\$ 3.8
Grumman Blvd	Wading River Rd.	Edwards Ave.	Reconstruct existing 2 lane road	4.0	\$ 3.4
TOTALS				21.6	\$21.3

* \$ million

Construction Costs

It is estimated that the construction costs of entrances and roadways will be about \$11 million, not including tree removal. Airside requirements, not including navigational aids, are shown in Table ALP-3 with cost estimates. The costs for the improvements such as taxiways, taxiway lighting are expected to be shared infrastructure costs borne by the new private-sector tenants, with full costs of the necessary aircraft aprons being covered by the individual tenants as part of their development. The construction costs shown are only the major cost items and reflect an order of magnitude planning cost in 1992 dollars.

The investment needed to meet the on-airport development items previously identified through public and private sources is approximately \$ 71 million. Another \$ 22 million for off-airport road capacity improvements is required. These figures do not include the design costs of the proposed development, other navigational aids for commercial aircraft use, the new sewage treatment plant collection and treatment, site drainage, or other miscellaneous costs such as building demolition, fencing, signage, etc.

The development of detailed cost figures, the timing of construction as well as the specific financing sources should be addressed under a comprehensive airport Master Plan approach.

TABLE ALP-2
Unit Costs for Airport Development Items *

Pavement Constn (Transport)	Square Yard	\$ 127.00
Pavement Constn (Utility)	Square Yard	\$ 97.00
Pavement Rehabilitation	Square Yard	\$ 30.00
Acft Parking Apron (Heavy)	Square Yard	\$ 127.00
Taxiway Constn	Square Yard	\$ 127.00
Road Access/Relocation	Square Yard	\$ 97.00
Earthwork	Square Yard	\$ 17.00
Tree Removal	Per Acre	\$ 6,000.00
Obstruction Removal	Per Acre	\$ 6,000.00
Conventional Hanger	Square Foot	\$ 50.00
Runway Lighting (MIRL/HIRL)	Linear Foot	\$ 44.50
Taxiway Lighting (MITL/HTL)	Linear Foot	\$ 50.00
Localizer	Lump Sum	\$ 300,000.00
Glideslope	Lump Sum	\$ 150,000.00
MALSR	Lump Sum	\$ 250,000.00
REIL	Lump Sum	\$ 13,200.00
VASI (4-box)	Lump Sum	\$ 20,250.00
ILS(per runway)	Lump Sum	\$ 650,000.00

* ALP Update, East Hampton Airport, March 1993

TABLE ALP-3
Airside Construction Requirements/Costs

<i>Item</i>	<i>Rwy 5-23</i>	<i>Rwy 14-32</i>	<i>Totals</i>	<i>Costs</i>
Taxiway	77,444 sy	102,444 sy	179,888 sy	\$22,845,776
Taxiway Lighting	17,650 lf	23,650 lf	41,300 lf	\$2,065,000
Instrmt Landing System		x		\$650,000
Total				\$25,560,776

<i>Item</i>	<i>Rwy 5-23</i>	<i>Rwy 14-32</i>	<i>Totals</i>	<i>Costs</i>
Aircraft Apron				
Aircraft Retrofit	36,111 sy			\$4,586,097
Aircraft Maintenance	33,333 sy			\$4,233,291
FBO/Cargo Services		17,847 sy		\$2,266,569
Air Cargo		16,666 sy		\$2,116,582
Integrated Carrier		15,555 sy		\$1,975,485
Totals	69,444 sy	50,068 sy	119,512 sy	\$15,178,024

Taxiway @ \$127/sy; Txwy Ltg @ \$50/lf; Acft Apron @ \$127/sy

